NATIONAL PARKS MAGAZINE

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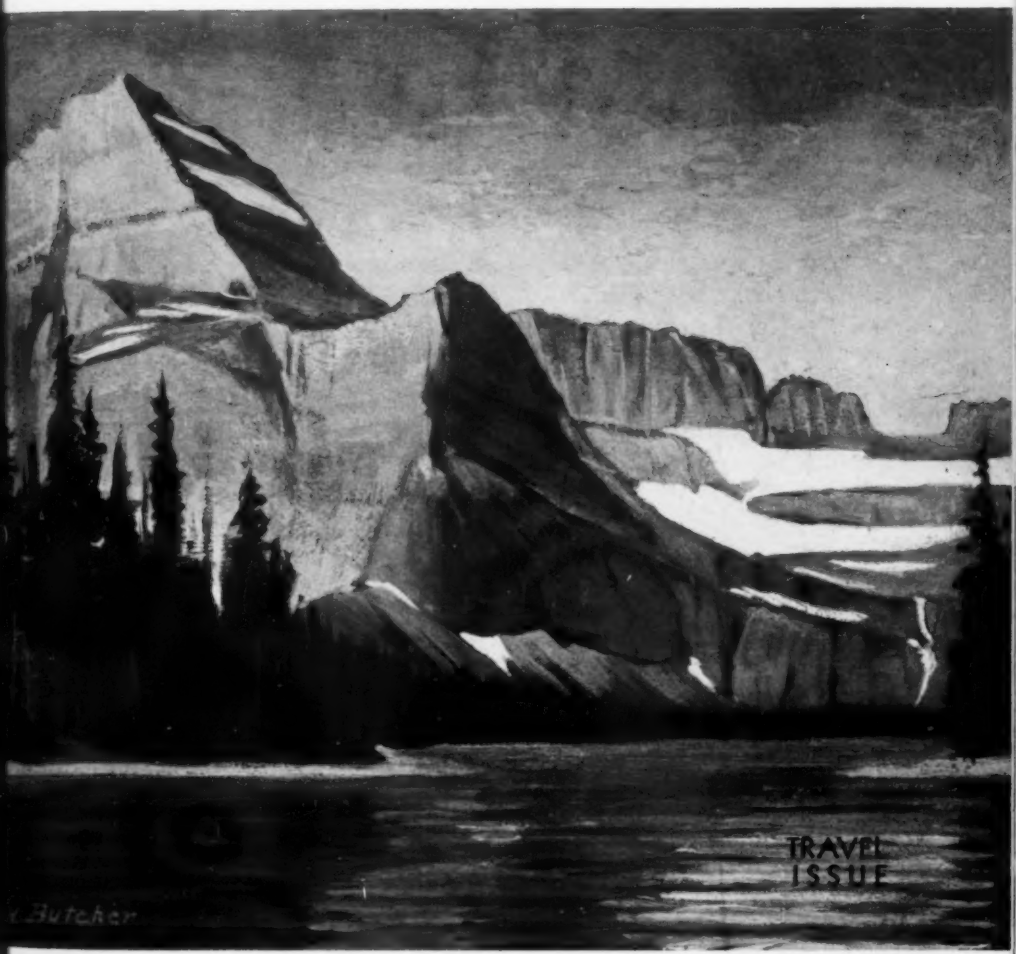

GOING TO GLACIER? — Page Three

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"Human construction may be torn down and replaced or made over as desired, but hasty experiments with nature may result in permanent destruction."—HENRY BALDWIN WARD.

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NATIONAL PARKS MAGAZINE, formerly National Parks Bulletin, has been published since 1919 by the National Parks Association. It presents articles of importance and of general interest relating to the national parks and monuments, and is issued quarterly for members of the Association and for others who are interested in the preservation of our national parks and monuments as well as in maintaining national park standards, and in helping to preserve wilderness. (See inside back cover.)

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Great Northern Railroad

The great ice sheet, a blue-white mass above which rose only the highest summits, was the final instrument in Glacier's molding more than five million years ago.

GOING TO GLACIER?

By ROBERT STERLING YARD

FASHIONED in faint suggestion of the Canadian Rockies, tinted in faint suggestion of the Grand Canyon, Glacier National Primeval Park is altogether individual, majestic, at times fantastic and startling, always beautiful.

Go to Glacier now, and tramp or ride her wilderness trails amid surroundings repeated nowhere else on earth. Camp by the way, or stop at chalets. Explore her wild-flowered cirques and her tiny wild-flower-bordered glaciers, zigzag up and down her tremendous precipices, climb her peaks, penetrate the amazing wilderness of her northwestern corner, and photograph her white mountain goats.

Above all, take time. You can see Glacier in a week; but you cannot capture her hidden spirit and absorb the range of her gorgeous beauty in much less than a season.

At Swiftcurrent Lake, one can pass days and weeks, without leaving the environs of Many Glacier Hotel, in contemplation of mountains, lakes and glaciers, which yield Glacier's inmost secrets.

But about the geologic romance. Without that in mind before you go, much of the pleasurable significance of Glacier will be lost.

Once upon a time, too long ago for human minds to grasp, what is now Montana, lay at the bottom of the shallow sea which then connected the Gulf of Mexico and the Arctic Ocean. Rivers brought washings from distant highlands and laid them as deposits upon the floor of the sea. The coarser fragments dropped first; they are conglomerate rocks today. The sand dropped next; they are today's sandstones. The finer particles deposited slowly as mud; they are the colored shales which are Glacier's most beautiful strata.

Upon the sea bottom, at quiet intervals, accumulated incalculable myriads of tiny shells, which became ooze and are now limestone. Imagine the lapse of time necessary to have accumulated the thousands of feet of gleaming limestone which, in mountains and mighty cliffs, are Glacier's largest exhibit.

Upon these strata a hundred million years heaped their other deposits, but where Glacier is, erosion has wiped them all away; the frosts disintegrated them; the riverlets and creeks carried them to the sea; today, in Glacier, are exposed the green shales, the red shales, and the fine gray limestones of that same period, which also deposited those splashes of vivid red seen here and there on the lips of the Granite Gorge in the Grand Canyon depths. Geologists call this incalculably ancient time the Algonkian Period.

Considerably later, but still uncountable centuries ago, internal earth pressures wrinkled the surface, making mountains, and into these growing elevations erosion bit deeply. In Glacier, all later deposits were washed away, leaving these Algonkian rocks upon the surface. Here, the tremendous pressure cracked the surface

THE COVER—This scene in Glacier National Primeval Park, from a painting by the editor, shows Mount Gould at left and the Garden Wall. Grinnell Falls, draining Grinnell Glacier, foams down the cliffs into Grinnell Lake. The glacier, the falls and the lake were named in honor of the late George Bird Grinnell, noted conservationist. Born in 1849, graduated from Yale in 1870, Dr. Grinnell was president of the National Parks Association from 1925 to 1929. It was largely through the efforts of Dr. Grinnell that Glacier National Primeval Park was established.

east and west of the serpentine ridge which is now the continental divide, on both sides of which the rocks sank; or perhaps it was the other way, that the central ridge was forced up above the levels on either side.

In the meantime, there came an enormous lateral pressure from the west, which pushed this whole divide twelve or fifteen miles over the top of the eastern surface. It is this precipitous edge of ancient rock resting on rocks of later origin which gives Glacier the extraordinary physical characteristics which differentiate its scenery from all others. This is called the Lewis Overthrust. You can trace it here and there in the rocks.

The final element in Glacier National Primeval Park's creation was the ice sheet. None but the higher summits stood above the blue-white mass that covered this region during the Ice Age, five million years or more ago. Subdivided beneath the surface, these glaciers dug deeply into valleys which stream-erosion had begun before the coming of the ice, and bit backward toward the great divide. It was these glaciers which scooped the huge cirques and canyons of today, which sliced these precipices, and which worked back, until, almost meeting, only blade-like walls were sometimes left to carry the continental divide. Sometimes glaciers actually met and hollowed passes through which trails cross today. When you cross Gunsight Pass, with its enormous cirque on either side, stop awhile until imagination reconstructs the spectacle of the ages.

The extraordinary land forms throughout Glacier are due to the quality of the rock upon which erosion has exerted its magic. Granite becomes splintered and knobby under the action of frost and water, which explains Yosemite and Rocky Mountain national primeval parks. Volcanic rocks erode into long slopes, rolling plains and steep canyons, as in Mount Rainier and Yellowstone national primeval parks. Sandstone produces richly ornamental Gothic structures and grouped pinnacles, as in Bryce Canyon National Primeval Park. The soft shales of Glacier, protected above by massive limestone, carve into an architecture all their own.

The softer argillites or shales below the protecting limestone are richly, often fantastically carved. One oft-repeated form suggests a keeled boat upside down. The sixty or more small remainders of the once mighty glaciers lie on shelves under the summits, and their outlet streams cascade from shelf to shelf, carving the precipitous shale fronts of each into beautiful forms.

Color as well as form is an essential part of the Glacier spectacle. The lowermost rock is limestone weathered a chrome yellow. Next above it is a stratum of green argillite. The basic tint is deep and dull, and from this it weathers every possible shade to black. The red stratum above this, also dull at its brightest, weathers through pinks and the wine tints to purplish black. Above this rises two to four thousand feet of rich gray limestone, across the front of which, near the summit level, stretches a broad straight band of black, an intrusion, as the geologists say, of diorite; it once burst from below, molten, and forced itself between horizontal beds of limestone.

Topographically, Glacier might be two national parks side by side, the continental divide between. The two sides are radically different. The eastern side is wild, precipiced, glaciered, with innumerable streams and lakes. The west side slopes broadly, is heavily forested, and long lakes reach westward from streams originating at the divide. The east side is elaborately scenic; this is the Glacier of the tourist. The west side is well populated with wildlife; it is the side of the nature-lover.

But both are, in a true sense, parts of the same park. They are crossed by several fine passes, and the explorer of Glacier knows them both.

One other topographic feature must be noted before we have the park in clear per-

spective. Let us call it the Avenue of the Giants. This consists of two valleys joined end to end in their beginnings of Flattop Mountain; McDonald Creek, flowing southerly, and Waterton River flowing northward. This great valley follows the center of the park northerly into Canada's Waterton Lakes Park, which adjoins Glacier across the boundary. Ranges of high mountains border it on both sides.

Of equal beauty is the valley of the Belly River. No one who enters the Belly River country will doubt the tradition of the name's origin. It is the Anglo-Saxon frontiersman's version of the French explorer's Belle; it is still the River Beautiful after it crosses the Canadian boundary.

There is a completeness about the two wonderful valleys formed by the South and Middle forks of the Belly River whose streams unite within the park, that makes this mountain-encircled region a little national park in itself. The upper stream, the Middle Fork, originates in a group of limestone cirques close to the top of the continental divide; in fact a scramble of five or six hundred feet will carry the adventurer over the top into the Valley of the Giants.

Some of the fields of perpetual snow and ice are true glaciers whose feet rest in blue lakelets from which their waters drop from shelf to shelf, a lakelet on each shelf, and combine to form the string of greater lakes which divide glacier-capped Mount Cleveland on the north from the enormous hollow chimney called Mount Merritt in the region's center.

The lower stream, the South Fork, originates in a gigantic well of limestone and colored shale whose sides are festooned with small hanging glaciers converging into Helen Lake. Westward, just below the crest, Ahern Glacier forces the trail from the Valley of the Giants to cross its slippery surface. Only rash adventurers use this trail, since horses slipped into the well many years ago.

Southward from Helen Lake rises a wall whose opposite side is the steep north

The striking handiwork of ancient glaciers is typified in the rocky shaft of Going-to-the-Sun Mountain at the west end of St. Mary Lake.

U. S. Department of Interior

wall of Iceberg Lake. The South Fork passes the open side of Mount Merritt whose shelved glaciers shine blue in the noon sun. The South and Middle Forks meet east of red Crossley Ridge, and the River Beautiful ripples out of the park past Chief Mountain's tremendous yellow horn and disappears in Canada.

Eighteen glaciers and as many lakes contribute to the Belly River spectacle. The camper in its valleys lives among deeply grassed meadows and heavily forested bottoms crossed with innumerable trout streams. There is no wilderness more luxuriant than this, none in which one gets a surer sense of the primitive. From his base camp east of Crossley Ridge or on the greater lakes of the Middle Fork, the hiker and the horseback rider have a wilderness empire at their pleasure.

Regular trail tours, with guides and camp equipment furnished, make various round trips covering different wilderness spectacles passing through the Belly River valley. But he who wants to know his Belly River valleys and the cirques and glaciers at their head must camp awhile and plan his own explorations.

At the head of Piegan Pass, Piegan Mountain with its tiny arctic flowers is worth climbing, and through the Hanging Garden one may pass on to Hidden Lake. Again, one may camp at the foot of Gunsight Lake, itself one of the wildest spots in America, and spend a day or days in the exploration of Blackfoot Glacier, the greatest in the park. Glacier Park has untold opportunities for the independent camper without departing far from the familiar trails of the southern half of the park.

In the northern wilderness, too, opportunities are many and spectacular.

From Waterton Lake, the Olsen Creek trail carries up a valley replete with surprises and crosses Brown Pass to a high grassy bench above Bowman Lake which is the center of a circle of scenic thrills. It includes a view of the lake from the top of a precipice twenty-five hundred feet high, a grim peak streaked with a thousand feet of frothing cascades.

From Waterton Lake, one can pass into Canada's Waterton Lakes Park, and from there by way of Canadian trails to a camping ground just north of the international line. From here access is easy into the extraordinary cirque country above the Kintla Lakes, the scenic climax of Glacier National Primeval Park. Kintla Peak, rising five thousand feet from the upper lake, spreading broad glaciers, wing-like, on either side, is the controlling figure in a composition whose other elements are on similar scale.

The return may be made southward to Granite Park, or through the Logan Pass trail to St. Mary Lake, or westward down McDonald Creek to McDonald Lake.

While the heavily forested western half of Glacier is the home of most of its wildlife, mountain goats and mountain sheep are frequently seen on the east side. During the tourist season, white goats are generally seen in family groups of three—mother, father and kiddie—browsing on invisible ledges a thousand or more feet up the apparently perpendicular sides of the lofty mountains. Bighorn sheep will be seen in groups of six or a dozen. Their favorite locations are the slopes on the glacier side of Grinnell Mountain, the slopes north of the trail to Iceberg Lake, and the mountains around Ptarmigan Lake; but neither they nor the goats are ever where you look for them. Somebody's cry of "Look! Look! What are those animals?" usually is the signal that your party has surprised a group in some unexpected location.

Glacier is not only for the rider and the hardy hiker. Thoughtful nature has provided accessible spots for those who neither ride nor hike. They are spots of rarest beauty, too, which studied with care, will yield the whole complicated story of nature's most fascinating geologic romance—for nothing less than that is the heritage of Glacier National Primeval Park.

EDITORIAL

The Plan for Captive Wildlife

IN order to bring to association members the full story of the plan to establish a wildlife park in Jackson Hole National Monument, the Executive Committee has approved publishing in this issue (see page 35) the article *Purpose of the Jackson Hole Wildlife Park* by Fairfield Osborn, President, New York Zoological Society. We present here our own views on the proposed project.

Although Mr. Osborn expresses the opinion that we oppose the idea of establishing a wildlife park, we have made it clear to him a number of times that we do not oppose the *idea*. What the Association objects to is the choice of location—within the boundaries of a great national monument.

According to Mr. Osborn, the purpose of the wildlife park will be to increase public appreciation of wildlife and to build greater public understanding of the problems involved in wildlife preservation. This intention, we feel, is of the best. But let us look at National Primeval Park Standards. This is a declaration of policy that applies to national monuments of similar character and purpose as the primeval parks, and that forms the basis for the decisions and activities of this Association. It contains the following: "Each primeval park area shall be a sanctuary for the scientific study and preservation of all animal and plant life originally within its limits, to the end that all native species shall be preserved as nearly as possible in their aboriginal state." This provision must be upheld, if the integrity of the National Park and Monument System is to be maintained.

A statement issued by the National Park Service on December 4, 1939, which is in full force today, contains this sentence: "Presentation of the animal life of the parks to the public shall be a wholly natural one." Wildlife confined by fences or moats is not in a natural state. Mr. Osborn says that animals have been enclosed in a number of parks, but he does not add that these exhibits were found wanting and, with but a single exception, have been eliminated by the National Park Service. Does this not indicate a Park Service policy against such a development?

Mr. Osborn says there are a few moose and deer in Jackson Hole, but not many. It should be understood that Congress never has appropriated funds for wildlife protection in the area. Killing with guns and traps has been carried on here ever since the area was proclaimed a national monument in 1943. The first move, therefore, to get all native species back on the area for the enjoyment of visitors is to have Congress make it possible for the Park Service to protect the monument's wildlife against killing.

Mr. Osborn says the monument is not entirely primeval. That is true of other similar monuments and of a few national parks. No area is entirely primeval that man has entered. But the purpose of these reservations is to preserve primeval conditions as nearly as possible; not to provide unnatural spectacles.

Mr. Osborn admits the project is an experiment. A national park or monument is not the place for an experiment, particularly one that may have far-reaching detrimental effects upon the whole system of parks and monuments.

The project is to be located on private land that has not yet been transferred to the federal government, and the owner of the tract has every right to promote the project. It can only be hoped that, before it is too late, Mr. Osborne and his committee will select a site outside the monument.

NATIONAL PARKS

ACADIA NATIONAL PARK is situated on Mount Desert Island off the coast of Maine. The park includes also Schoodic Peninsula on the mainland. It is our only national park having boundaries on an ocean shore. Although established as a park in 1919, a small part of the present area became Sieur de Monts National Monument by Presidential proclamation in 1916. Mount Desert Island was discovered in 1604 by Samuel de Champlain, and in 1688 it was granted to Antoine de la Mothe Cadillac by Louis XIV of France. In 1762 it was given by Massachusetts to Sir Francis Bernard, who was governor of the colony. Within the park there are forty-two square miles of forest, lakes, mountains and rocky coast. The highest point in the park is Cadillac Mountain, 1530 feet above sea level, and this is also the highest point along our Atlantic coast. In all, there are twenty mountains comprising a range of glacier-worn granite. Acadia's forests are made up chiefly of red, white and pitch pine, red and white spruce, hemlock, beech, yellow, canoe and gray birch, red maple, and, in boggy areas, white cedar and black spruce. Notable for its encircling stand of the latter is the Big Heath on the west side of the park. The Big Heath is probably the finest example of black spruce bog in the Park System. Because of much rain and the ocean-born fogs, Acadia is rich in mosses and lichens, and it has an abundance of flowering plants such as orchises, pitcherplant, the brilliant red cardinal flower and the pink lady's slipper. Deer and beaver inhabit the park, as well as such smaller mammals as the red squirrel and chipmunk. The osprey, bald eagle, ruffed grouse, cormorant, common loon, herring gull and great blue heron are among the park's larger birds; while thrushes, warblers and numerous other song-birds are present during the summer. An excellent system of foot trails is maintained for those who wish to become acquainted with the beauty of the park.

Acadia Mountain, in Acadia National Park, seen here across Valley Cove from the forest of red spruce atop Flying Mountain, is one of the park's twenty mountains overlooking the Atlantic Ocean.

National Parks Association

The great charm of the Acadia landscape lies in its unusual combination of lakes, mountains and seashore. Although there may be some small remnants of primeval forest within the park, particularly in the west side, the park can not be considered a primeval area. This being the case, it would seem all the more important to hold road building in this park to an absolute minimum. Unfortunately, this has not been done, and today most of the last wild recesses of Acadia have been opened, or are planned to be opened with roads. Actually, there are two separate road systems in the park—one for automobiles and one for horse-drawn carriages. A number of outstandingly beautiful spots in the park have thus been injured needlessly and irreparably. It is important that other national parks be guarded against this form of desecration.

Park headquarters is at Bar Harbor. Hotels and cabins are located in or near the several small towns on the island, and there are three campgrounds in the park. Acadia is reached by road on U. S. Highway 1 east from Bangor and Ellsworth, Maine, connecting with State Route 3 east of Ellsworth. State Route 3 crosses the bridge onto the island. The Schoodic Peninsula portion of the park is reached by way of Winter Harbor twenty-eight miles southeast of Ellsworth on the mainland. The Maine Central Railroad leaves visitors at Ellsworth where bus service is available to the various towns on the island. Buses also serve Ellsworth from points in New England. The park is open all year, but hotels are open only in summer.

NATURALIST AND INTERPRETIVE SERVICE is provided in most national parks, and in some national monuments. This includes conducted walks with a ranger naturalist who interprets the natural features of the areas—the geologic formations, the trees, the wild flowers and other plant life, the birds and the mammals. At many parks illustrated talks are given by ranger naturalists. These are held in the hotels or at campfires. In a number of the parks there are museums where visitors are able to learn about the areas through dioramas and other exhibits.

BIG BEND NATIONAL PRIMEVAL PARK, in west Texas, was established in 1944 to protect 1106 square miles of wild desert, canyons and mountains. (It is hoped that Mexico will establish a national park across the Rio Grande, adjoining Big Bend, to form an international park.) Geologists tell us that the rock of the canyons is limestone deposited millions of years ago when the area was the bed of an ocean. They tell us, too, that in a later geologic period the area was covered with the dense swamp forests that were the habitat of dinosaurs. Volcanic activity belonging to a still later geologic era is in evidence in the Chisos Mountains and elsewhere. The Rio Grande, forming the international boundary, flows through three deep canyons—Santa Elena, Mariscal and Boquillas—which are among the spectacular features of the reservation. The chief mountain ranges, with their castellated rimrock, are the Chisos and the Sierra del Carmen, their highest summits nearly 8000 feet above sea level. The desert flora consists of such interesting species as century plant, yucca, ocotillo, sotol, lecheguilla, cholla cactus, strawberry cactus, prickly pear cactus, mesquite and creosote bush. In the lower canyons, there are buckeye, hackberry, persimmon, desert willow, Apache plume and ash; while on the upper slopes there are pinyon pine, juniper, acacia and mimosa. In the higher canyons there are forests of Arizona cypress, ponderosa pine, Douglas fir and madrone—trees common to country far to the north. Prior to park establishment there were livestock ranches in the area, and the native vegetation had suffered from grazing. However, with exclusion of livestock, and under the care of the National Park Service, vegetation is being restored. The wildlife of Big Bend is varied, and it includes species found in no other national park. Frogs, lizards and snakes of several kinds occur, and among the mammals there are beaver, jack-rabbit, coyote, mountain lion, black bear, kit fox, peccary (wild pigs), pronghorn antelope, mule deer and Arizona white-tail deer. The roadrunner, Mearns and scaled quail, Inca dove and cactus wren are common birds; while the Couch jay, Colima warbler, Texas blue-throated hummingbird, Mexican phainopepla

and dwarf red-shafted flicker, ranging mainly to the southward, here reach their northern limits. Other birds native to the park are the painted redstart, Stephens vireo and lucifer hummingbird. In the low desert country, the rainfall is about eight inches annually, while high up in the mountains it averages about fifteen to twenty inches with some snow in winter. The summer weather is cool in the high country, but typically dry and hot on the desert.

Headquarters is within the park, and the post office address is Marathon, Texas. A few housekeeping cabins are available. Hotel accommodations can be had at Alpine, 110 miles from the southwest entrance, and at Marathon, 80 miles from headquarters. Both towns are on U. S. Highway 90, and on the Southern Pacific Railroad. The park is reached from Marathon on State Route 227, and from Alpine by a county road. The park is open all year.

BRYCE CANYON NATIONAL PRIMEVAL PARK, located in southern Utah, was established in 1928 to preserve an area of eroded pink and white limestone and sandstone formations. The park, comprising an area of fifty-six square miles, is not strictly a canyon, but rather, an irregular cliff below which rise the beautifully colored columns that have been sculptured by rain and snow. The cliff faces east, and from it there is a wide view of mesas, ridges and mountains to the distant horizon. Trails for hikers and horseback riders make it possible for visitors to descend among the many-hued formations. Forests in the upper country of Bryce are mostly coniferous and include ponderosa pine, fir, golden aspen, and the rare bristlecone or foxtail pine. In the low country, slopes are sparsely covered with chaparral, pinyon pine and juniper. Mountain lion, gray fox, coyote, bobcat, mule deer, porcupine, yellow-bellied marmot, prairie dog, chipmunk and squirrel inhabit the reservation as well as many species of lizards. Bird life is abundant during the summer months.

From Inspiration Point at Bryce Canyon National Primeval Park one can look down upon a fantastic landscape of innumerable eroded limestone and sandstone formations that are aglow with rich color.

George A. Grant

The park is under joint administration with Zion National Primeval Park, and headquarters is at Springdale, Utah. Accommodations are available at Bryce Canyon Lodge. There is a camp center with housekeeping cabins, and a public campground. By road the park is reached from north and south on U. S. Highway 89 to State Route 12 just south of Panguitch. The Union Pacific Railroad leaves visitors at Cedar City, and the Denver and Rio Grande Western at Marysvale. The Utah Parks Company provides bus service from both points to the park. United Airlines serves Salt Lake City. The park is open throughout the year, but facilities for visitors are available only from May 10 to November 1.

CARLSBAD CAVERNS NATIONAL PRIMEVAL PARK, located in southeastern New Mexico, contains the world's largest and most spectacular limestone caverns. The area was proclaimed a national monument in 1923 and was given national park status in 1930. The explored part of the major cavern extends for twenty-three miles and has three miles of trails now open to visitors. There are three levels, the deepest being 1320 feet below ground, but only the 750 foot level is open for general visitor use. The caverns were discovered in 1901 by a local cowboy, Jim White, who was attracted to the entrance one evening by what appeared to be a cloud of smoke. Upon investigation, it was found that the cloud was not smoke, but swarms of bats leaving the cave's mouth on their nocturnal flight. The caverns are made up of a series of connected rooms with beautiful calcite formations such as the Giant Dome, Crystal Springs Dome, Chandeliers and the Onyx Drapes. The largest of the rooms, The Big Room, is about 1300 feet long by 1000 feet wide with the ceiling arching overhead to some 200 feet above the trail. The stalagmite and stalactite formations are the result of water seeping through the overlying limestone and consequent deposition of mineral upon evaporation of the water when reaching the open rooms. The process of building these formations is slow and fluctuates widely because of changing climatic conditions. Air temperature in the caverns remains constant at fifty-six degrees. For the convenience of visitors, the government has installed elevator service to the 750 foot level. Four hours are required to make the trip through the cavern, with an additional hour if the visitor walks to the surface by trail instead of going by elevator. The park's above-ground area contains sixty-seven square miles of desert country which, as in other national parks, is a sanctuary for wildlife and plant life. The mammal population includes the mule deer, ringtail cat, gray fox, coyote, rock squirrel, porcupine and an occasional mountain bobcat. Many species of birds are present, with the scaled quail, canyon wren, cactus wren, western mocking bird, pyrrhuloxia, and many kinds of hawks and owls being the most frequently seen. Among the interesting plants are ocotillo, catclaw, mesquite, several species of yucca, sotol, agave, juniper, gray oak and several kinds of cactus.

Park headquarters is twenty-seven miles via U. S. Highway 62 southwest from Carlsbad, New Mexico. No overnight accommodations are available in the park, but these may be obtained in White's City, just outside the park boundary, as well as at Carlsbad and nearby towns on U. S. highways 62 and 283. El Paso, Texas, the nearest large city, is 153 miles west of the caverns. A branch line of the Santa Fe Railroad from Clovis, New Mexico, serves the town of Carlsbad, and the Southern Pacific Railroad serves El Paso. Bus service is available to the park from El Paso and Carlsbad. Carlsbad is on the Continental Air Line routes. The park is open all year with scheduled trips conducted daily by park guides.

CRATER LAKE NATIONAL PRIMEVAL PARK, established in 1902, is located on the summit of the Cascade Range in Southern Oregon. Comprising 250 square miles, its chief feature is the lake lying in the crater of an extinct volcano. According to geologists, this volcano, Mount Mazama, once was 12,000 feet or more above sea level at its summit, when, thousands of years ago, it caved in after a violent eruption. The colorful cliffs, 500 to 2,000 feet in height, surrounding the lake today are all that is left of the

U. S. Department of Interior

Wizard Island near the west side of Crater Lake is a volcanic cone that was formed some time after the violent eruption that brought about the collapse of Mount Mazama.

once great peak. Impressive displays of color may be found in every region of the world and blue water is a familiar sight. In Crater Lake, however, interest is drawn and held by an expanse of blue not exceeded in intensity or brilliance by any other lake or sea, and by its contrast with a landscape especially fitted to emphasize these charms. Likewise, although there are many calderas throughout the world that exceed Crater Lake in size, few if any can rival it in majesty and beauty, and none more clearly reveals the manner in which the mountain was built, how it came to be destroyed, and how the crater was formed. Here among the ruins of a giant volcano, nature has produced a landscape of such extraordinary and inspiring beauty that it has been well named one of the eight wonders of the world. Here nature has given us an unparalleled opportunity to study her method of creation. The lake, having neither inlet nor outlet, is fed by rain and snow. It covers an area of twenty square miles and is twenty-six miles around. The forests of the lower country of the park are composed of Douglas fir, western yellow pine, white fir and sugar pine, one of the largest and most handsome of all pines. In the higher elevations such as around the crater rim, there are alpine and Shasta red fir, whitebark pine and mountain hemlock, the latter being abundant and forming vistas through which to view the lake. Among the park's mammals there are pine, flying, golden-mantled ground and silver-gray squirrels, two species of chipmunks, yellow-bellied marmot, badger, porcupine, showshoe rabbit, pocket gopher, beaver, mountain beaver, blacktail and mule deer and black bear. The park's birds include the golden and bald eagle, falcon, osprey, horned owl, California gull, cormorant and Sierra grouse, as well as a variety of song and insectivorous species such as the red-breasted nuthatch, Sierra brown creeper, Sierra junco, mountain chickadee, western evening grosbeak, western tanager, spotted and green-tailed towhee and Townsend's solitaire.

Crater Lake National Primeval Park, like all of the other national primeval parks and many national monuments, is a sanctuary for wildlife. However, Crater Lake, like

most of these nature reservations, is, in one respect, inadequate as a sanctuary. It provides only the summer range for certain species, particularly deer, but little or no winter range. As soon as snow falls in the park's high country, the deer are forced to migrate to lower lands outside the park in order to find winter food and to escape the severe cold of the higher altitudes. Once outside the park boundaries, they often fall prey to gunners. It is plain to see that if any one of the great parks is to be made a biotic unit, its boundaries must be extended to include both summer and winter ranges for its larger mammals. This failure to include winter range lands in the parks is the cause of many perplexing wildlife problems.

Headquarters is within the park, and the summer address is Crater Lake, Oregon. The winter address is Medford, Oregon. Crater Lake Lodge, with housekeeping cabins and store, is located near the rim. For those who bring their own equipment, there are four campgrounds in the park. Crater Lake is reached by road over U. S. Highway 97 north from Klamath Falls or south from Bend, Oregon, and over U. S. Highway 99 north from Ashland to Medford, Oregon, and thence over State Route 62 to the park. The Southern Pacific Railroad leaves visitors at Klamath Falls or Grants Pass, where bus service to the park is available from about July 1 to September 19. United Airlines serves Medford. In spite of heavy snow in winter, the park is open all year.

THE NATIONAL PARK SERVICE, trustee of our national nature reservations, was created by Act of Congress on August 25, 1916. The duty of the Service is to "promote and regulate the use of the federal areas . . . by such means and measures as conform to the fundamental purpose of the . . . parks, monuments and reservations, which purpose is to conserve the scenery, and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

GLACIER NATIONAL PRIMEVAL PARK, located in the Rockies of northwestern Montana, was set aside as a national park in 1910. Comprising an area of 1583 square miles, the reservation is one of outstandingly beautiful glacier-carved country, from which fact its name is derived. The mountains on the east side of the park resulted from the earth's crust having been lifted and forced eastward for a distance of fifteen miles. Here geologists find rock layers several hundred million years old lying above other layers many million years younger. More recently, when this part of the continent was covered by ice, vast glaciers hundreds of feet thick ground away for thousands of years to form the U-shaped valleys and the peaks that we see today. The great glaciers have vanished, but there remain in the high cirques about sixty small glaciers which are still in process of disappearing. On the west side of the park the mountains are less rugged and there is a more luxuriant forest growth because of heavier rainfall. Two hundred lakes, most of them of glacial origin, add to the beauty of the park's primeval landscape. The forests on the east are made up mostly of lodgepole, limber and whitebark pines, Englemann spruce, and Douglas and alpine fir; while the forests of the west side, being in a different province of plant life, are made up of such trees as western red cedar, western hemlock, western larch, white birch, black cottonwood, western white and ponderosa pines, and grand and alpine firs, the latter with its spire-like form, characteristic of the high slopes and cirques. The white mountain goat is perhaps the best known mammal of Glacier. Other species in the park are the elk, moose, bighorn sheep, whitetail and mule deer, black and grizzly bear, mink, otter, badger, marten, coyote, beaver, hoary marmot, muskrat, red fox, pika or cony, snowshoe rabbit and porcupine. The little rabbit-like cony is an inhabitant of the many large talus slopes that occur at the bases of the sheer mountain walls. Several species of squirrel and chipmunk are abundant and friendly to visitors. Birds in the park are numerous, and include such outstanding species as common loon, red-breasted, hooded and American mergansers, osprey, bald

Devereux Butcher

A. B. Cameter

When leaping from ledge to ledge on precipitous mountain sides, the white mountain goat in Glacier, Olympic and Mount Rainier national primeval parks provides thrills for visitors. Black bears dwell in many of the parks and are perhaps the leading wildlife attraction for visitors. In spite of the bears' seeming gentleness, many accidents have resulted from well-meaning handouts. Visitors, beware. Don't feed the bears.

and golden eagles, ruffed, Richardson and Franklin grouse, white-tailed ptarmigan, red-shafted flicker, Rocky Mountain jay, Clark crow, northern varied thrush, Alaska three-toed woodpecker, pine siskin, rufous hummingbird, water ouzel, mountain bluebird and crossbill. This park is a paradise for the botanist. Mosses and lichens abound, particularly on the west side; and in the higher elevations, there are Indian paintbrush, gentian, shooting-star, carpet pink, pentstemons, larkspur, monkey flower, glacier lily and bear grass with its conspicuous white flower clusters borne on tall stalks. Among the ferns there are parsley fern, holly fern and many others. The park has a good system of trails for horseback riders and hikers, affording opportunity to reach the rugged wilderness.

Waterton Lakes National Park in Alberta, Canada, adjoins Glacier National Primeval Park on the international border, the two areas forming the Waterton-Glacier International Peace Park. Waterton Lakes Park, considerably smaller than Glacier, contains features similar to the latter. Prince of Wales Hotel provides accommodations for visitors.

Glacier Park headquarters is at Belton, Montana. There are three hotels in the park: Glacier Park, Many Glacier and Lake McDonald; also the following chalets: Two Medicine, Granite Park, Sperry, Going-to-the-Sun and Cutbank. (The last two closed in 1946.) There are several campgrounds, and near Many Glacier Hotel are housekeeping cabins. The hotels and chalets are open from June 15 to September 15. Glacier Park is reached by road from the east over U. S. Highway 89 from Great Falls, Montana, and from the west over U. S. Highway 2 from Kalispell, Montana. Going-to-the-Sun Highway, open to traffic after June 15 crosses the park from east to west by way of Logan Pass. The Great Northern Railroad comes directly to the west entrance at Belton and to the east entrance at Glacier Park Station, where Glacier Park Transport Company buses meet visitors from June 15 to September 15. Bus service is available from Missoula, Great Falls and Butte, Montana, and from Bonner's Ferry, Idaho. The Central

Canadian Greyhound Lines buses connect at Waterton Lakes, Alberta, with Glacier Park Transport Company buses.

GRAND CANYON NATIONAL PRIMEVAL PARK in northern Arizona, an area of 1009 square miles, was established in 1919. The present park area, together with an additional portion of the canyon extending to the west, had been made a national monument in 1908 by Presidential proclamation under authority of the Antiquities Act of 1906. The park contains about half of the Grand Canyon of the Colorado River. A mile deep, and varying in width from four to eighteen miles, this huge cut in the earth's surface is the result of several million years of erosion by water. Rising from the floor of the canyon is an array of temples, towers and castles, their intricately carved rock walls brightly colored, predominantly red. From hour to hour the colors of the canyon change, responding to the varying directions of sunlight, and to clouds, rain and atmospheric conditions; and contrasting with the warm colors of the cliffs and talus slopes are the blue shadows filling deep recesses and softening the outlines of distant buttes and escarpments. The Grand Canyon offers a fertile field for geologic study, for it is like a book with the pages thrown open, wherein the geologist is able to read the story of earth-building from the earliest period, the Archean, on up through the Permian period. Here even the forms of animal and plant life that inhabited the earth during the several periods are revealed in ancient footprints, and in the fossil remains of the animals and plants themselves. Just as there are several life zones on mountain ranges, so also are there various life zones in the Grand Canyon. There are four altogether. At the bottom of the canyon where the weather is warm and dry, the vegetation is similar to that of the desert of southern Arizona or Mexico where cactus, sage and mesquite thrive on dry sites, and cottonwood trees and willows line the banks of streams. In the cooler climate on the rim at from 6000 to 8000 feet above sea level there are pinyon and ponderosa pine, and here in winter snow often covers the ground to a depth of a foot or two. Among the park's mammals are mule deer, coyote, ringtail cat, bobcat, pronghorn antelope, badger, raccoon, striped and spotted skunks, gray fox, as well as two handsome species of squirrel—the Kaibab, whose entire range is confined to the north rim country, and the Abert on the south rim. Both of these squirrels are large and handsome and have long ear-tufts. The Kaibab squirrel has a conspicuous white tail. Mountain lions once were plentiful in the canyon and surrounding forests, but organized killing outside the park boundaries has reduced their numbers. If this large, shy and interesting native animal is to be saved within the few areas where it still exists, informed public opinion must make itself heard. Among the birds recorded in the Grand Canyon country are golden and southern bald eagles, white-faced glossy ibis, Gambel's quail, avocet, northern and Wilson's phalaropes, roadrunner, Nuttall's poor-will, Pacific nighthawk, black-chinned, broad-tailed and calliope hummingbirds, long-crested, Woodhouse and pinyon jays, canyon wren, sage thrasher, chestnut-backed and mountain bluebirds, Scott's and Bullock's oriole's, lazuli bunting and Mexican crossbill. Roads lead along the canyon's pine-clad rims, and trails for horseback riders and hikers descend into the canyon. It is possible to go from rim to rim by way of a suspension bridge that spans the river in the inner gorge.

Park headquarters is on the south rim, and the address is Grand Canyon, Arizona.

From June 1 to the end of September, Grand Canyon Lodge, housekeeping cabins with cafeteria, and a campground on the north rim are open for visitors. The north rim is reached by road over State Route 67, which leaves U. S. Highway 89 fifty-five miles south of Mt. Carmel, Utah, at Jacob Lake, Arizona. Visitors coming to the north rim by train, leave the Union Pacific Railroad at Cedar City, Utah, where buses of the Utah Parks Company provide transportation to the north rim, as well as to Zion and Bryce Canyon national primeval parks and Cedar Breaks National Monument. Other bus service is available from Salt Lake City, Utah, and Flagstaff, Arizona, to Jacob Lake.

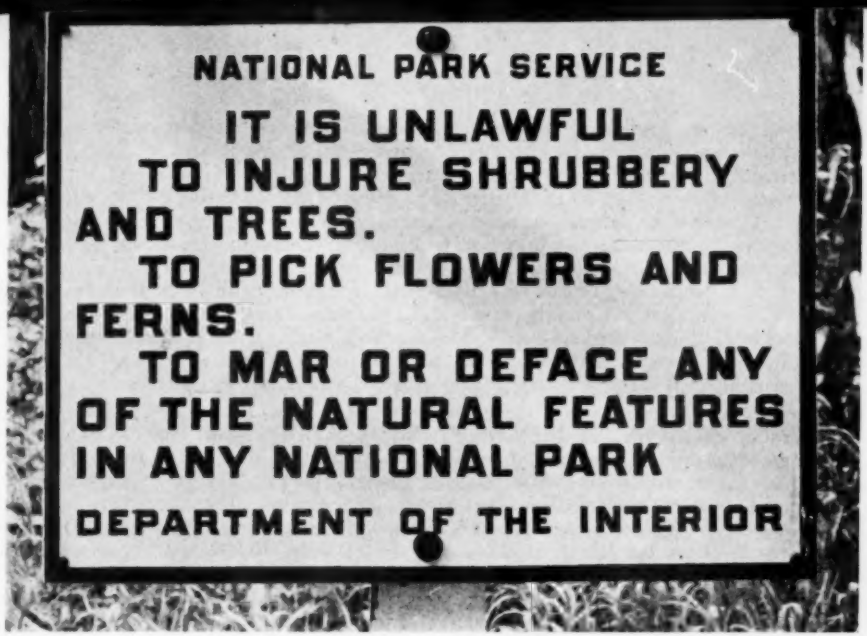
The south rim is open all year, with El Tovar Hotel, Bright Angel Lodge and cabins, a camp with housekeeping cabins and a campground providing accommodations.

Phantom Ranch in the canyon offers accommodations to riders and hikers. State Route 64 connecting with U. S. Highway 66 two miles east of Williams, Arizona, runs to the south rim. State Route 64 also connects with U. S. Highway 89 at Cameron, Arizona. The Santa Fe Railroad serves Williams, and from here daily Pullman trains run to the park. Fred Harvey buses also operate between Williams and the park.

GRAND TETON NATIONAL PRIMEVAL PARK, located in northwestern Wyoming, was established in 1929 to protect 150 square miles of jagged mountains and wild forests. The northern boundary of the park is eleven miles south of Yellowstone National Primeval Park, and the northern and eastern borders adjoin the Jackson Hole National Monument. The Teton range with its spire-like peaks of pale gray rock is particularly impressive when seen across the level sage-covered flats of Jackson Hole. Standing isolated from other mountain ranges, the Tetons rise abruptly from the valley to a height of more than 7000 feet. The park's highest summit, Grand Teton, is 13,766 feet above sea level. In all, there are thirty-seven named peaks in the park, five large lakes and several small alpine lakes. According to geologists, the Tetons comprise a fault-block range. In early geologic times the rock comprising the present mountain range was broken off along a north-south line and slowly uplifted probably to a height of more than 20,000 feet above its former position. The plain along the east side of the break, Jackson Hole, was lowered, but remained fairly level. More recently, during the ice age, glaciers streamed down over the Tetons shaping them into the peaks we see today. Moraines of the glaciers are in evidence across the canyons and in Jackson Hole, where they form lakes. Such glacial lakes are Jenny, Leigh, Phelps, Taggart and Bradley. The forests of Grand Teton National Primeval Park are composed of whitebark, limber and lodgepole pines, alpine and Douglas fir, Engelmann and Colorado blue spruce, cottonwood and quaking aspen. The largest known whitebark pine is in this park. Moose is the most common large mammal of the area. Elk, bighorn sheep, black and grizzly bear, mule deer, marten, badger, red fox, beaver, cony, snowshoe and white-tailed jack rabbits, porcupine, muskrat, yellow-bellied marmot, coyote, mink and otter also inhabit the park. Among the birds of Grand Teton there are Barrow's golden-eye duck, American merganser, Richardson's and gray ruffed grouse, western horned owl, red-naped and Natalie's sapsuckers, Clark crow, long-tailed and mountain chickadees, water ouzel, mountain bluebird, Bohemian waxwing and lazuli bunting. In the park's four life zones there is a wide variety of flowering plants that start blooming as soon as the snow melts in spring. Visitors will find in Grand Teton a fine system of trails for hikers and horseback riders winding through the forested lower slopes and into the high peaks.

Park headquarters is within the park. The address is Moose, Wyoming. Accommodations are available at numerous privately owned ranches in Jackson Hole, and there are campgrounds in the park at Jenny Lake and String Lake. Grand Teton National Primeval Park is reached by road from the north on U. S. Highway 89 from Yellowstone National Primeval Park; from the southeast on U. S. Highway 287 from Rawlins, Wyoming, to Moran near the east entrance to the park; from the south on U. S. highways 187 and 189 from Rock Springs and Evanston, Wyoming, to Jackson near the south entrance to Jackson Hole National Monument. There is also a scenic route to the park, State Route 22, from Victor, Idaho, which crosses the Teton Mountains at Teton Pass. Yellowstone Park Company buses take visitors from Yellowstone National Primeval Park to Grand Teton National Primeval Park. Bus service is also available from Victor to Moran. There is train service to West Yellowstone and Gardner, Montana, Cody, Wyoming and Victor. The park is open from June 15 to September 15.

GREAT SMOKY MOUNTAINS NATIONAL PRIMEVAL PARK, in North Carolina and Tennessee, finally established and dedicated in 1940 to protect the last sizeable remnant of southern primeval hardwood forest, comprises an area of 720 square miles.



Devereux Butcher

In order that those who come next shall also enjoy, it is an imperative duty of each park visitor to protect from injury all forms of nature in the national parks and monuments.

The park contains a number of the highest mountains in the East. Several peaks are over 6000 feet above sea level, with Clingman's Dome, the highest in the park, 6643 feet. Great Smoky is comparable in grandeur and in its wilderness solitudes to many of the western parks. It represents eastern landscape and the finest of eastern forests. Its features are its spurred ridges, deep valleys, wild mountain scenery, the splendor of its flowering, its innumerable waters and its great areas of richly varied deciduous forest untouched by the ax. There are 130 species of native trees in the park, among them virgin stands of red spruce along the high ridges, and eastern hemlock, buckeye, black cherry, silverbell, yellow birch and tulip tree, the latter attaining great size. The American chestnut, once abundant here, grew to large proportions, but this fine tree has been practically exterminated by the chestnut blight. In May, June and July rhododendrons ranging from white to purple-pink make magnificent color displays along the high, open ridges as well as in the towering forests on the lower slopes. Blooms of dogwood, redbud, azalea and mountain laurel add to the park's primeval beauty. Besides the trees and flowering shrubs there is an abundance of flowering plants which reach their height of blossoming in late April. When the park was created, wildlife was scarce owing to killing by gunners. However, under protection, many species such as bear, deer, fox, raccoon and bobcat, as well as ruffed grouse and turkey are coming back. There are many fine trails for hiking and horseback riding. The famous Appalachian Trail which runs from Maine to Georgia passes through the park.

A few years ago the superb wilderness of this park was threatened with being split in two by a sky-line road. Eight miles of such a road was constructed to Clingman's Dome. As far as wilderness and nature preservation are concerned, road building is one of civilization's most destructive activities. If any part of North America is to remain as nature made it, the human urge to build roads must be controlled. Constant vigilance on the part of all who appreciate nature is necessary to prevent needless road building in the primeval parks and other wilderness reservations.

Great Smoky headquarters is at Gatlinburg, Tennessee. Accommodations within the park are available from June through August at the Wonderland Club Hotel within the park at Elkmont on State Route 73, which runs between Gatlinburg and Maryville, Tennessee; and from May 15 to October 15 at Mount LeConte Lodge on the summit of Mount LeConte. The latter can be reached only on foot or horseback. There are campgrounds at Smokemont, North Carolina, and at Chimneys, Tennessee, within the park on state routes 71 and 107 which join at the state line in the park and run through the park from Knoxville, Tennessee, on the west, connecting with U. S. Highway 19 to Asheville, North Carolina, on the east. Hotel accommodations are available all year at Asheville, Gatlinburg and Knoxville. The Southern Railroad and Louisville and Nashville Railroad leave visitors at Knoxville, and the Southern Railroad at Asheville. From both towns bus service to the park is available. The park is open all year.

HAWAII NATIONAL PRIMEVAL PARK, in the Hawaiian Islands, is located partly on the Island of Hawaii and partly on the Island of Maui. The two areas total 270 square miles, and were established as a national park in 1916 to protect not only the volcanic wonders, but also its fauna and tropical forests. There are three volcanos in the park. These are Mauna Loa, 13,680 feet above sea level, and Kilauea, 4000 feet above sea level, on the Island of Hawaii; and Haleakala, 10,032 feet above sea level, on the Island of Maui. Mauna Loa is active approximately every four years, while nearby Kilauea also erupts frequently. Such regular and frequent volcanic activity lends unusual interest to this park. The crater of Kilauea often contains a lake of lava that hisses and rumbles and boils like geysers, and after sundown it makes a spectacular display, for it is then that its seething mass of molten lava and flames with their bright colors of red, orange, purple, green and blue can best be appreciated. The summit of Mauna Loa, though hot inside, is covered with snow part of the year. Haleakala, now dormant for 200 years, has a crater a thousand feet deep, seven miles long and three miles wide. Hawaii National Primeval Park contains a jungle of tree ferns. These ferns

Kilauea Volcano in Hawaii National Primeval Park presents an awe-inspiring exhibit of volcanic activity when it erupts about once a year.

K. Maehara

attain heights of up to forty feet, and their fronds are twenty-five feet in length. The handsome ohia tree adds to the striking beauty of this fern forest. Taller than the ferns, and spreading above them, this tree has gray-green leaves and brilliant red blossoms called "lehua," and designated as the flower of the islands. Hawaiian mahogany, or koa, and sandalwood are other trees of great beauty in the park. Among the flowering plants is the silversword, which grows nowhere else in the world. In the park it is found only in the crater of Haleakala. Resembling the yuccas of Arizona and New Mexico, it has narrow silvery leaves and a cluster of purple flowers borne at the top of a tall stalk. This plant, like the century plant, blooms but once during its life. The silversword, together with much of the original vegetation of the park, has suffered from grazing goats which were imported to the islands many years before the park was established. In order to restore, in so far as possible, the natural plant life of the area, every effort has been made to keep the goats out of the park during recent years. Unfortunately there has been considerable importation of exotic species of birds to the islands. A few of the more important native species are the akiapolaau, a brown and white thrush known as the amao, a member of the flycatcher family called the elepaio, the amakihi, and the apapane of red, black and white plumage. Most brilliant of the park's birds is the iiwi which frequents the ohia trees. The male of the iiwi is scarlet with black wings and tail and pink sickle-shaped bill. One of the rare birds of the park is the nene or Hawaiian goose which is sometimes seen on the slopes of Mauna Loa. Its rarity is due to killing by gunners prior to park establishment. For visitors who like to hike, there are 153 miles of foot trails in the park. An automobile road goes to the top of Haleakala, and a road goes part way to the summit of Mauna Loa.

Park headquarters is at Kilauea. The address is Hawaii National Park, Territory of Hawaii. Accommodations are provided for visitors at Volcano House in the Mauna Loa-Kilauea section of the park on the Island of Hawaii. Open all year, both sections of the park are reached by steamer from Honolulu.

ISLE ROYALE NATIONAL PRIMEVAL PARK was established in 1940 to protect a wilderness island of 210 square miles located in waters belonging to the State of Michigan in northern Lake Superior. The island is fifty miles from the shore of Michigan's northern peninsula, and twenty miles from the Canadian and Minnesota shores. According to geologists, the island was submerged for many years after the great ice sheet receded, finally appearing after the level of the lake had fallen. The shores are rocky, with caves and high jagged cliffs. The island, forty-five miles in length and, at its greatest width, nine miles wide, has a number of lakes and several narrow bays reaching far inland. The forest growth is dense, with balsam fir as the dominant coniferous species. There are also white cedar, white and black spruce, tamarack, red, white and jack pine, trailing juniper, white, black and yellow birch, striped, red and sugar maple, black ash, and northern red oak. Flowering plants in woods and bogs are numerous, including such species as bunchberry, Labrador tea, pipsissewa, twinflower, pitcher plant, trillium, one-flowered pyrola and several kinds of orchises. There is also an abundance of mosses, ferns, lichens and fungi. Most important mammal of the island is the moose, of which there is a considerable number. Coyote, snowshoe rabbit and beaver also inhabit Isle Royale, as well as a large number of bird species including the osprey, Canada jay, herring gull, downy and pileated woodpeckers, chickadee, American merganser, black duck, and bald eagle. There are trails to various points.

In the summer of 1936, during a period of high winds and dry weather, forty-six square miles—nearly one fourth—of Isle Royale's forests were burned. It will require more than a hundred years for that same area to return to some semblance of the original primeval forest. The destruction of plant and wildlife habitat, and the loss of natural beauty, are complete when brought about by fire. To prevent this kind of desecration in the National Park System during dry summer months when thousands of people are in the parks, calls for constant care and vigilance on the part of every visitor.

Park headquarters is at Houghton, Michigan, in winter, and on Mott Island in Isle Royale's Rock Harbor from May to November. The address is Isle Royale National Park, via Houghton, Michigan. Rock Harbor Lodge, accommodating visitors, is located in the harbor of that name, where boats come in from Copper Harbor, Michigan, Buffalo, New York, and from Duluth and Grand Marais, Minnesota. Windigo Inn also accommodates visitors at Washington Harbor. Belle Isle Camp, on a small island off the northwest coast of Isle Royale, provides meals and has cottages for rent. The park is open from June 15 to September 15.

KINGS CANYON NATIONAL PRIMEVAL PARK. **See SEQUOIA-KINGS CANYON NATIONAL PRIMEVAL PARK.**

LASSEN VOLCANIC NATIONAL PRIMEVAL PARK, in northern California, was established in 1916. The area comprises 163 square miles of mountain and forest country that is full of the remains of volcanic activity. Chief feature of the park is Lassen Park, which is the last volcano to erupt in the United States proper, having made 298 outbursts between the years 1914 and 1921. Important among the park's volcanic exhibits are Bumpas Hell, Sulphur Works and Devil's Kitchen, all three consisting of sulphur and steam fumaroles. Other exhibits are the Cinder Cone with its lava flow of 1850-51 and its barren, symmetrical slopes of loose cinders; and Chaos Crags and Chaos Jumbles, scenes of extreme desolation, which are the remains of lava domes that have been shattered by later activity. The Devastated Area is another point of interest. The conditions of this area were brought about by a blast of gas and a torrent of mud suddenly released down the northeast slope of Lassen Peak, which wiped out the forest in its path. Throughout the park there are over fifty lakes, most of them lying hidden in the wilderness or accessible by trail only. Lassen's forests consist of such conifers as whitebark, ponderosa and sugar pine, incense cedar, red and white fir and mountain hemlock. Blacktail and mule deer inhabit the park as well as numerous smaller mammals such as squirrel, marmot, coney, mink and badger. Nearly 300 species of wildflowers have been identified in the park. Along Kings Creek and Manzanita Creek the meadows are filled with wild flowers in summer. Perhaps the most interesting floral species on the reservation is the crimson snow-plant, which appears as soon as the snow leaves, and remains for several weeks.

The wild flower meadows of Lassen, together with those of other national parks, especially in California, have been coveted by local livestock interests. Attempts have been made by these interests to legalize cattle grazing on the parks' meadows. Such action by the livestock interests is motivated by a desire for personal profit at the national expense. It shows their failure to recognize that the parks have been created in conformity to the will of the people for the purpose of preserving a bit of primitive landscape for the enjoyment of future generations. Grazing cattle on the parks' meadows would result in the utter destruction of the natural flora which is of interest to thousands of visitors annually. Protection of Lassen and other great parks from such destructive commercial invasion calls for constant vigilance by the public.

Lassen Volcanic National Park headquarters is at Mineral, California. Accommodations are available at Manzanita Lake Lodge where there are also housekeeping cabins. There are five campgrounds for those who bring their own equipment. The park is reached by road from Redding and Red Bluff, California, on the west, over state routes 44 and 36 respectively, connecting with State Route 89, which runs through the park. It can be reached also over State Route 36 from Susanville on the east. The Southern Pacific Railroad leaves visitors at Red Bluff and Redding, and the Western Pacific Railroad at Keddie, from which points bus service operates to the park. Lassen is open during the summer months, opening and closing dates depending upon the weather.

MAMMOTH CAVE NATIONAL PARK, in southwestern Kentucky, became fully established in 1941 to provide protection for the limestone cave of that name. So far,

five levels and 150 miles of the cave have been explored. The lowest level is 360 feet below the surface. Amid the scenic effects of stalagmites, stalacites, drapery formations and the domed pits that are characteristic of this cave, there are three rivers, eight waterfalls and two lakes within the caverns. The pits are a hundred feet deep with domes rising above them to a height of approximately forty-eight feet. Of great beauty are the gypsum formations of Mammoth Cave. These occur in such forms as needles, woolly masses, flower-like growths, pendants and coils of whitish translucent crystals. Though the predominant color of the cave is gray, much of it is tinted red, yellow and purple by manganese and iron oxide. The air within the cave is always fresh, remaining at fifty-four degrees. Bats inhabit the cave in large numbers. Here, too, dwells the cave cricket, and in the subterranean lakes and streams are found the eyeless cave fish and the cave crawfish. The Park Service conducts three or four trips of varying length through the cave each day. For visitors taking the all-day trip of seven and a half hours, lunch is served in the Snowball Dining Room, 267 feet underground. The park's above-ground area comprises seventy-eight square miles. It is hilly and forested, and is traversed by the Green and Nolin rivers, tributaries of the Ohio River. Although the park's forests are not primeval, there are many large trees in the river bottomlands. Trees of the reservation are mostly hardwood species, and include shagbark hickory, beech, sugar and red maple, black gum, yellow poplar, white ash, sycamore, American elm, sassafras and black willow. Mountain laurel adds its blooms to the spring floral display of shadbush dogwood and redbud. Important among the park's wild flowers and ferns are Solomon seal, wake robin, May apple, twinleaf, bloodroot, jack-in-the-pulpit, polypody fern, purple cliff brake and the interesting walking fern. Red and gray fox, eastern woodchuck, muskrat, skunk, mink, opossum, raccoon, cottontail rabbit, chipmunk, weasel and three species of squirrels—the gray, fox and flying—also inhabit the park. More than 170 species of birds have been recorded. These include eastern bobwhite, spotted sandpiper, yellow-billed and black-billed cuckoo, screech and northern barred owl, chuck-will's-widow, eastern whip-poor-will, northern flicker and the large, spectacular pileated woodpecker.

There is boating on the park's rivers. Powerboats come up from the Ohio River, and these, as well as outboard motors, are used within the park. Unfortunately the outboard motor, in particular, has perhaps no equal as a disturbing influence to people wishing to enjoy the quiet and beauty of nature. Since the national parks serve primarily as sanctuaries for the study and enjoyment of nature, it is sometimes seriously questioned whether power craft of this kind should be permitted within a national park.

Headquarters is within the park. The address is Mammoth Cave, Kentucky. Mammoth Cave Hotel, open all year, with cabins for rent during the summer only, provides accommodations. The park is reached by road over U. S. Highway 31W south from Louisville to Cave City, Kentucky, or north from Nashville, Tennessee. From Cave City, State Route 70 runs to the park, a distance of eleven miles. The Louisville and Nashville Railroad and Greyhound Bus Lines operate to Cave City where taxis are available to the park. The park is open all year.

MESA VERDE NATIONAL PARK, in extreme southwestern Colorado, was established in 1906 to protect the finest prehistoric Indian cliff dwellings in this country; also, splendid examples of prehistoric pit houses and surface pueblo dwellings. The park, consisting of a mesa gashed by many deep canyons and standing about 2000 feet above the surrounding plain, comprises an area of eighty square miles. Largest of the cliff dwellings is Cliff Palace, which contains more than 200 living rooms, twenty-three kivas, and eight floor levels—all within a single cave. Another large cliff dwelling group in a remarkable state of preservation is Spruce Tree House with 114 rooms and eight kivas. Scattered throughout the twenty large canyons and the numerous small side canyons are many hundreds of ruins.

The area was occupied from about 1 A. D. until about 1300 A. D., when the in-

habitants were forced to leave because of protracted drought. For the first 700 years of this period the Indians are known as the Basket Makers; during the later part of the occupation they are called Pueblo Indians because of the pueblo-building custom that developed. The story of these Indians, their skills in the arts and crafts, their methods of building and agriculture, as reconstructed, provides an absorbing study for those interested in catching a glimpse of North America's prehistoric civilization.

Inhabiting the park are such mammals as the Rocky Mountain mule deer, black bear, fox, coyote, bobcat, badger, porcupine, prairie dog, and chipmunk. The area lately has been experimentally restocked with Rocky Mountain bighorn sheep and the Merriam wild turkey which formerly lived there. The dense forest cover is composed chiefly of Utah juniper, pinyon pine, and scrub oak, augmented by such flowering shrubs as serviceberry, antelope brush, mountain mahogany and mock orange. Wildflowers are abundant in spring and fall.

Headquarters is in the park, and the address is Mesa Verde National Park, Colorado. At Spruce Tree Lodge there are cabins and meals available from May 15 to October 15, as well as housekeeping cabins and tents. A free, modern campground is located near park headquarters and is open during nonfreezing weather—about May 1 to November 1. The park entrance is located on U. S. Highway 160 halfway between Mancos and Cortez, Colorado, and is twenty miles from park headquarters. The Denver and Rio Grande Western Railroad runs to Grand Junction, Montrose, and Durango, Colorado; the Santa Fe Railroad to Gallup, New Mexico. Daily bus service to the park is provided from these and other points. Bus transportation between the park entrance and park headquarters is not available on Sundays during the non-travel season. The park is open from May 15 to October 15.

KILLING OF WILDLIFE in the national parks is prohibited. Nearly every one of the acts of Congress establishing national parks contains the statement "That all hunting or the killing, wounding, or capturing at any time of any bird or wild animal, except dangerous animals when it is necessary to prevent them from destroying human lives or inflicting personal injury, is prohibited within the limits of said park."

MOUNT McKINLEY NATIONAL PRIMEVAL PARK, in south central Alaska, was created in 1917 to preserve 3030 square miles of the primeval landscape and to protect the wildlife of the area. Unlike most of the primeval parks, this one has but little forest land. Trees and shrubs clothe the valleys and slopes below 3000 feet altitude, but a large portion of the park above that altitude is grassy tundra, while all the rest is bare rock, or snow and ice. Along the south side of the park is the Alaska Range, from which rises the highest peak on the continent of North America, Mount McKinley—called Denali by the Indians—20,300 feet above sea level. The upper two thirds of Mount McKinley are always covered with snow and ice. Muldrow Glacier, descending from the northeast flank of the mountain, is thirty miles long, and is the largest of many glaciers in the park. Black spruce is the most abundant of the park's evergreens. White spruce and tamarack are found here also, as well as black cottonwood, quaking aspen, paper birch and willow, the latter going high on the slopes and becoming small in size. In the valleys there are dwarf birch, Labrador tea, blueberry, bearberry and wild rose. Wild flowers of the park include larkspur, valerium, bluebells, monkshood, bunchberry, pyrola, twinflower, crowberry, purple vetch, lemon yellow arctic poppy and water willow which has large cerise flowers. In summer, when these plants are in bloom, the days are warm and sunny, with the temperature ranging from sixty to eighty degrees. In winter the thermometer drops to as low as fifty degrees below zero at times, but averages from five to ten below, with snow twenty inches deep. Like the other primeval parks, Mount McKinley is a wildlife preserve. Important mammals found here are the white Dall sheep, caribou, moose, Toklat grizzly bear, wolf, wolverine, red fox, marmot, parka squirrel, porcupine, lynx, coyote, beaver, marten, mink, snowshoe rabbit and cony.

This is the only national park in which the caribou and the wolf occur today. The caribou has been shot and nearly exterminated over a large part of its North American range, but large herds still survive in this part of Alaska. The wolf, one of the most interesting species of native fauna, has been nearly exterminated throughout North America. It is still trapped and shot in Alaska, finding a haven of safety from its greatest enemy, man, in this park alone. Although the wolf is vanishing rapidly, there is frequent pressure on the part of gunners to have it wiped out completely, even within the park. This is because the Dall sheep, highly prized as a target by the gunners, serves also as part of the natural prey of the wolf. Thus, the gunner regards the wolf as a competitor. The expression of public disapproval of wolf extermination is constantly needed if the species is to be saved. Among the birds of the park there are the willow ptarmigan and the rare surfbird, which nests here and nowhere else in the world. There are also the yellow-billed loon, whistling swan, lesser snow goose, western harlequin and old-squaw ducks, golden and bald eagles, little brown crane, Pacific golden plover, wandering tattler, long-tailed jaeger, arctic tern, snowy owl, Alaska three-toed woodpecker and Bohemian waxwing.

Headquarters is within the park. The address is McKinley Park, Alaska. Accommodations are available at Mount McKinley Park Hotel near the railroad station at the eastern end of the park, and at Camp Eielson, a tent camp, sixty-six miles west along the park highway. The Alaska railroad serves the park from Seward on the coast, 348 miles distant, and Fairbanks, 123 miles away. Boats of the Alaska Steamship Company, plying the scenic coastal route north from Seattle, Washington, stop at Seward. The park is open from June 10 to September 15.

MOUNT RAINIER NATIONAL PRIMEVAL PARK is a superb wilderness remnant of Washington's Cascade Mountains. Established in 1899, and comprising an area of 377 square miles, the park's chief feature is the snow-covered Mount Rainier, 14,408 feet above sea level, which contains the largest single-peak glacier system in the United

The purple-pink shooting star is one of the many floral gems of the national park alpine meadows. Among the rock slides at the bases of rocky cliffs lives the cony. These pictures were taken in Glacier National Primeval Park.

Devereux Butcher

States. Towering majestically above the surrounding country, the white dome of the mountain is visible for a hundred miles in every direction. On the mountain there are twenty-five glaciers that vary from fifty to 500 feet in thickness, and cover an area of about forty square miles. They recede a little each year. Mount Rainier is an extinct volcano. Some geologists think that at one time far back in geologic history the mountain may have been as high as 16,000 feet, and that an eruption blew off the upper 2000 feet, lowering it to its present elevation. The year 1870 was an eventful one for Mount Rainier. In that year its last feeble outburst of volcanic activity occurred, and in that year the summit was first scaled by man. Traces of volcanic activity are still present in the mountain, as shown by hot springs at its foot and by steam vents in the crater. Sunrises and sunsets coloring Rainier's snowmass afford one of the most impressive sights in the National Park System. Within the park there are 240 miles of trails with shelters for hikers located at convenient places. The Wonderland Trail encircles the mountain. Important trees of Mount Rainier's forests are the Douglas fir, western and mountain hemlock, western yew, western red and Alaska yellow cedar grand, silver, noble and alpine fir, whitebark and western white pine and Englemann spruce. Whitebark pine and alpine fir grow in picturesque clumps in the high alpine country. The mountain hemlock, also a high altitude species, is one of the most beautiful of all North American trees. Among the wild flowers of the park are the white avalanche fawnlily, which grows in the alpine meadows and comes out as the snow melts in spring. There are bright orange, scarlet and magenta paintedcups red and cream mountainheaths, blue lupine and the tiny Lyall lupine not over three inches high, having downy leaves and a cluster of blue flowers. Inhabiting the park are black bear, mountain goat, elk, blacktail deer, coyote, raccoon, red fox, marten, beaver, marmot, porcupine, cony, snowshoe rabbit and several species of squirrels, mountain beaver, a rodent about the size of a muskrat, but with almost no tail, and a distant relative of the common beaver, also lives in the park's moist, cool meadows and woodlands. The bird enthusiast finds Rainier a fertile area. Among the many birds that live here are the sooty grouse, white-tailed ptarmigan, bandtailed pigeon, golden and bald eagle, several owls including the saw-whet and the pigmy, several members of the woodpecker group including the Alaska three-toed and the Lewis, Vaux swift, rufous hummingbird, steller jay, northern raven, Clark crow, white-winged and Sitka crossbill, Hepburn rosy finch, western tanager, northern violet-green swallow and water ouzel.

Mount Rainier National Primeval Park is one of our great national nature reservations in which are located tracts of privately owned land. Such privately owned land within the parks and monuments constitutes a serious threat to the continued preservation of the areas, because their owners are able to develop them in any way that they wish—cut the trees, develop mines, graze livestock or establish beer and dance halls and tourist accommodations. Such activity is inconsistent with park policy and purpose, and the existence of these tracts hinders effective administration wherever they occur. Elimination of private lands will be brought about when a united public urges Congress to appropriate funds for their purchase by the federal government. In 1945, one such tract nearly brought disaster to 300 acres of Mount Rainier's forests. The owners of the tract threatened to sell out to a lumber company. Sale to the logging firm was narrowly averted when funds became available for acquisition by the government, resulting in the incorporation of the tract into the national park.

Mount Rainier headquarters is at Longmire, Washington. Visitor accommodations are provided in Paradise Valley at Paradise Inn and Paradise Lodge. At Longmire there are cabins; at Ohanapecosh there are a lodge, housekeeping cabins and a store, and at the Yakima Park area there is a cafeteria. In addition, there are numerous campgrounds in the park. Mount Rainier is reached by road over U. S. Highway 410 from Tacoma, and from Seattle over State Route 5, which joins U. S. Highway 410 at Enumclaw. Both the White River and the Carbon River entrances are reached by this route. The Longmire entrance is reached over State Route 5 from Tacoma. From

Yakima, Washington, the park is reached over U. S. Highway 410 from the east. Buses of the Rainier National Park Company provide service from Seattle and Tacoma to Longmire and Paradise Valley throughout the year, and in summer from Tacoma, Seattle and Yakima to Yakima Park as well. The Great Northern, Northern Pacific and Union Pacific railroads serve Tacoma and Seattle, while the Northern Pacific serves Yakima.

OLYMPIC NATIONAL PRIMEVAL PARK, a nearly roadless wilderness of 1321 square miles overlooking the Pacific Ocean, was established as a national park in 1938. In 1909, part of the area had been made a national monument, but all of the monument is now included in the park. Located on Washington's Olympic Peninsula, the park comprises a rugged mountain mass. The peaks, of which Mount Olympus, 7923 feet above sea level, is the highest, are glacier-carved, with their lower slopes clothed in a magnificent forest of conifers. On the westward-facing slopes, which are exposed to the rain clouds that drift in from the ocean's warm Japan Current, is the great Olympic rain forest. Here there is an annual average precipitation of 142 inches which produces a forest of fantastic appearance and of huge proportions. Dominant tree species growing in this forest are Sitka spruce, Douglas and silver fir, western red cedar and western and mountain hemlock. The largest tree in the park is a western red cedar. The largest of its kind known, this tree has a trunk diameter of twenty feet at four feet above the ground. One Douglas fir in the park has a diameter of seventeen feet eight inches, and many trees in the park reach a height of 200 feet. Dripping with rain, and with ground, trunk and limb cloaked in moss, this forest displays a great variety of greens even on the grayest of days. It constitutes one of the most outstanding exhibits of nature on the continent of North America. On the eastern and northern slopes of the Olympic Mountains, rhododendron, madrone and cascara are abundant; while the alpine meadows of the high elevations are gardens of wild flowers during summer. Among the ferns, there are sword fern, western maidenhair and deer fern, the two latter being perhaps the most beautiful of all North American species. Olympic is the home of the Roosevelt elk. Inhabiting the park also are blacktail deer, snowshoe rabbit, black bear, beaver and mountain beaver.

This primeval park, now preserved for the enjoyment of future generations, has been coveted by local lumber mills. These mills, having exploited the forests outside the park boundaries with little or no thought for future lumber needs, have made a number of attempts to break into the park and destroy the forests there. Public opinion has stood rigidly opposed to such desecration. Local mining interests likewise seek to invade this superb reservation. Only by the constant vigilance of an informed public can desecrating activities like these be prevented.

Park headquarters is at Port Angeles. The address is Olympic National Park, Port Angeles, Washington. Within the park the following hotels provide accommodations for visitors: Lake Crescent Lodge, Rosemary Inn, Storm King Inn, Ovington's and Graves Creek Inn. Cabins at many locations are also available, as well as campgrounds, and shelters along the main trails. Outside the park there are hotels and cabin camps at Port Angeles, Forks, Aberdeen, Hoquiam, Hoodsport, Port Townsend, Sequim, Queets and Quinault, the latter overlooking Lake Quinault at the southwest corner of the park. The park is reached by ferry from Seattle and Edmunds, Washington, and from Victoria, British Columbia, to Port Angeles or Port Ludlow. The Olympic Highway, which is part of U. S. Highway 101 encircling the park, is reached from Olympia and Aberdeen. The park is open all year.

ROCKY MOUNTAIN NATIONAL PRIMEVAL PARK was established in 1915. The area, located in northern Colorado's Rocky Mountains, is 405 square miles in extent. It contains sixty-five named peaks of 10,000 feet altitude and over, with Longs Peak the highest, 14,255 feet above sea level. The park is dotted with lakes, of which most are

George A. Grant

The Twin Sisters, Estes Cone and Beaver Park are features in the wild and inspiring landscape of Rocky Mountain National Primeval Park.

glacial in origin, a few having been created by beavers. In the canyons and along the streams on the east side of the park grows the beautiful and comparatively rare Colorado blue spruce. Ponderosa pine and Douglas fir are other notable trees of the park; while in the higher altitudes there are limber pine, Englemann spruce and alpine fir. Quaking aspen is one of the most abundant trees on the reservation. Over large areas in canyons and on lower slopes, it forms pure stands, and here its light colored trunks in winter offer contrast to the somber forests of evergreen. In autumn the leaves of the aspen turn brilliant yellow, making a spectacular display on the mountains. In summer the alpine meadows of this park are bright with such flowers as gentians, pentstemons, and lilies. Blue columbine, the state flower of Colorado, is found at lower elevations. The forests and meadows are inhabited by elk, mule deer, Rocky Mountain bighorn sheep, bobcat, black bear, coyote, marten, mink, badger, porcupine, muskrat, Fremont and Abert squirrels, Say's ground squirrel, chipmunk, beaver, marmot and cony. Besides the geologic, botanic and other interests of the park, the area is a paradise for the bird enthusiast. The list of migrants and permanent residents is long. Outstanding among the many species are several ducks such as the gadwall, green-winged and blue-winged teals, ring-neck duck, redhead duck, golden eagle, Wilson's phalarope, Howell's nighthawk, northern white-throated swift, broad-tailed hummingbird, Rocky Mountain and long-crested jays, water ouzel, ptarmigan, rosy finch, chestnut-backed and mountain bluebirds, yellow-headed blackbird and western tanager.

The Congressional Act establishing this park contained a provision to allow the United States Reclamation Service to "enter upon and utilize for flowage or other purposes any area within said park. . . ." The result is that recently a water-diversion tunnel has been constructed beneath the park to carry water from the west side of the continental divide to the east side for irrigation of crop lands outside the park. Friends of wilderness and nature preservation won a victory in this case, for it is through

their efforts that both ends of the tunnel are outside of park boundaries, and certain power lines have been routed outside the park also. However, the provision established one more precedent dangerous to the future integrity of the entire National Park System.

Park headquarters is at Estes Park, Colorado. Accommodations within the park are available at Bear Lake Lodge, Grand Lake Lodge, Forest Inn, Camp Woods, Brinwood Hotel, and Sprague's Lodge. In addition, there are six campgrounds. All are open during the summer months. At the villages of Estes Park and Grand Lake, located close to the park boundaries, as well as at privately owned establishments within the park, there are accommodations available all year. U. S. Highway 34 runs through the park. The park is reached on the east from Denver, Greeley and Fort Collins, and on the west from Granby, Colorado. The Union Pacific Railroad leaves visitors at Denver or Greeley, and the Denver and Rio Grande Western Railroad at Granby, from which points the Rocky Mountain Motor Company provides bus service to the park during the summer travel season. Most of the park is open all year.

SEQUOIA-KINGS CANYON NATIONAL PRIMEVAL PARK, on the west slope of the Sierra Nevada of California, is actually two adjoining national primeval parks. The Sequoia Park area was established in 1890 to preserve thirty-two groves of the *Sequoia gigantea* which were then in imminent danger of destruction by ax, saw and dynamite. Since 1890 the park has been enlarged until today it comprises 604 square miles of mountain and forest wilderness. The mountains of the park are glacier-carved, and rise to 14,494 feet at the summit of Mt. Whitney. This is the highest mountain in the United States proper, being overtopped by Mount McKinley in Alaska. Five caves in the park, of which Crystal Cave is largest, are of interest. The outstanding feature of Sequoia is the Giant Forest. The towering red columns of the sequoia trunks, rising clean among the huge white firs, incense cedars, sugar and ponderosa pines, and disappearing amid the foliage of these smaller trees, amaze the visitor. He may spend days wandering through this marvelous forest, finding sequoias singly and in groups, in hundreds, thousands, even in many thousands if he counts the seedlings; yet he never outlives his first surprise. Here he must readjust his sense of proportion. Those who spend years in the reservation say that they never cease to marvel at the majesty of the trees. Adding to the beauty of the sequoia forest are numerous small, flower-filled meadows where bordering sequoias retain their limbs and foliage far down along their trunks. The estimated age of the oldest sequoias approximates 4000 years, and many of the trees attain a height of 300 feet with trunk diameters of twenty feet. Western white, whitebark and lodgepole pine also grow within the park, but these are found at higher elevations.

The Kings Canyon area, adjoining Sequoia on the north, was established in 1940 to preserve its rugged mountains, canyons and sequoia forests in a roadless wilderness. To this park were added the groves of the former General Grant National Park, the latter having been abolished as a separate national park in the same year. Added, also, were 10,000 acres of Redwood Mountain and Redwood Canyon. The Kings Canyon reservation totals an area of 710 square miles. It extends westward from the splintered crest of the Sierra and contains a number of spectacular canyons including Tehipite Valley, one of the most striking features in American scenery. Wholly lacking the Yosemite Valley type of beauty, it is larger, more rugged, and its walls higher. Tehipite Dome, rising from the north wall, is 3200 feet above the valley floor, and is one of the five greatest rocks of the scenic world, the others being El Capitan and Half Dome in Yosemite, Grand Sentinel in Kings River Canyon, and the Great White Throne in Zion National Primeval Park. Opposite Tehipite Dome rises Mount Harrington from whose summit cascades tumble into the Middle Fork of the Kings River.

Besides the upper watersheds of the Middle and South forks of the Kings, the park includes Evolution Valley and the famous Evolution basin at the headwaters of the South Fork of the San Joaquin River. It is regrettable, but important to note, that

Fred M. Packard

Throughout most of its range within the United States the bighorn sheep is declining in numbers. In Glacier, Yellowstone, Rocky Mountain, Sequoia-Kings Canyon, Zion and Grand Teton it finds protection from gunners.

the magnificent climax portions of the canyons of the Middle and South forks—in a compromise with power and irrigation interests—were omitted from the park at the time of establishment. These were left available as the Cedar Grove and Tehipite reclamation withdrawals for possible future commercial utilization as reservoir sites. If public opinion fails to prevent such development, these two superb canyons may be flooded and lost forever to future generations as was the Hetch Hetchy Valley in Yosemite National Primeval Park.

Mammals inhabiting the Sequoia-Kings Canyon National Primeval Park include black bear and mule deer which are numerous, the latter wandering unafraid about the campgrounds. Other mammals in the park are marmot, coyote, cony, gray fox, Columbia gray and Douglas squirrels, mountain beaver, porcupine, badger, ringtail cat, opossum, raccoon, marten, and in the high rocky peaks, bighorn sheep. One of the strange plants that inhabits the forests is the flowering fungus scientifically known as *Pleuricospora fimbriolata*. A species found in sunny exposed places is the bright red hummingbird trumpet. The meadows bordering the little alpine lakes are veritable wildflower gardens in spring and summer, while the chaparral-covered foothills in the park are fragrant in early spring with the blooms of buckthorn, manzanita, wild lilac and many other trees and shrubs native to this lower elevation.

Headquarters for both areas is at Ash Mountain on the General's Highway, with the post office address Sequoia National Park, California. In Sequoia, accommodations are available at Giant Forest Lodge from May to September. Cabins are also available here, as well as housekeeping cabins at Camp Kaweah and at Pinewood Shelter. Hospital Rock Camp is open all year. During the summer Bearpaw Meadow Camp, with tents and meals, is open to hikers and horseback riders. There are several campgrounds in Sequoia. In Kings Canyon there are two camps with cabins at the General Grant Groves and there is a campground here, as well as at Cedar Grove. Giant Forest Winter Camp, when open, is available from September to May. The parks are reached north from Bakersfield, California, on U. S. Highway 99 to the junction with State Route

198 which passes through Visalia to the Ash Mountain entrance of Sequoia, and over State Route 180 from Fresno on U. S. Highway 99 to the General Grant Grove entrance. The Southern Pacific and Santa Fe railroads leave visitors at Fresno and Visalia. Buses of the Pacific Greyhound and Santa Fe Trail System serve these towns. From here there is scheduled bus service to the parks in summer, and on call in winter. The parks are open all year.

SHENANDOAH NATIONAL PARK, an area of 302 square miles, established in 1935, is in the Blue Ridge Mountains of Virginia. The park, eighty miles west of Washington, D. C., is seventy-five miles in length, and extends from the town of Front Royal on the north to Jarman Gap on the south. The highest point in the park is Hawksbill Mountain 4049 feet above sea level. The Skyline Drive winds along the ridge through the whole length of the park, and affords wide views of the valleys and distant ranges to east and west. The Appalachian Trail, which runs from Maine to Georgia, also follows the ridge, and is joined by numerous others that form a network of trails through the park. Shelters at intervals along the main trail provide overnight sleeping accommodations for hikers. Hemlock and pine are scattered through the park's forests, which are chiefly of hardwoods that make a display of color in autumn. Large white trillium, pink azalea and mountain laurel, make conspicuous floral shows in spring, and these together with pink lady's slipper, bloodroot, hepatica, marigold, golden groundsel, turk's cap lily, wood lily and closed gentian are among the important flowering species of the park. Gray and red fox, raccoon, bobcat, Virginia white-tailed deer, opossum, gray and flying squirrels, woodchuck and chipmunk are a few members of the reservation's mammalian population.

Headquarters is five miles east of Luray, Virginia, on U. S. Highway 211. The address is Luray, Virginia. Accommodations from April to about the first of November are available at Big Meadows Lodge, while cabins at Dickey Ridge, Skyland, Big Meadows and Swift Run Gap are also available. Restaurants are operated at all of these locations, as well as at Elk Wallow and Panorama. There is a camp ground at Big Meadows, and picnic grounds are located at Big Meadows, Dickey Ridge, Elk Wallow, Lewis Mountain, Pinnacles and South River. For reservations, address the Virginia Skyline Company, Inc., Luray, Virginia. The park is reached by road from Winchester and Front Royal, Virginia, on U. S. Highway 522 and State Route 12 going south. U. S. Highway 211 crosses the park at Thornton Gap; U. S. Highway 33 crosses at Swift Run Gap, and U. S. Highway 250 from Charlottesville to Waynesboro, Virginia, connects with the Skyline Drive eight miles below the south end of the park.

WIND CAVE NATIONAL PARK, in South Dakota's Black Hills, was created in 1903 to protect a cave of which ten miles, so far, have been explored. Discovered in 1881, this cave contains limestone formations known as boxwork. This boxwork, which differs greatly from the stalagmite and stalactite formations seen in many large caves, occurs only in the Black Hills, and in appreciable quantities only in this cave. The name of the cave was suggested by the current of wind that flows through it—outward when the barometer is falling, and inward when rising. The park's above-ground area comprises eighteen square miles of rolling prairies and wooded hills used as a preserve for bison, antelope, elk and deer. It was in an effort to save these species, particularly the bison and antelope, from extinction, that the American Bison Society placed breeding stocks of the animals on the reservation in 1912. Other mammals inhabiting the park are the prairie dog, raccoon and coyote. Among the birds there are the prairie sharptailed grouse, red-shafted flicker, mourning dove, red-headed woodpecker, Say's phoebe and horned lark. Ponderosa pine, a dominant tree of the park, grows here with Rocky Mountain cedar; while such deciduous trees as American elm, wild plum, white ash, cottonwood and quaking aspen grow in the valleys. Some of the more common flowering plants are the coneflower, Indian paintbrush, bedstraw, false indigo and columbine.

Headquarters is within the preserve, and the address is Hot Springs, South Dakota. There is a campground with lunchroom and store open from June through August, located near headquarters. Hotel accommodations are available at Hot Springs, ten miles south on U. S. Highway 85A. The park is reached by road south from Custer, South Dakota, or north from Hot Springs on this route. Visitors leave the Chicago, Burlington and Quincy Railroad, or the Chicago and Northwestern Railroad at Hot Springs, Buffalo Gap or Pringle, South Dakota, from which points bus service is available to the park. The park is open all year.

YELLOWSTONE NATIONAL PRIMEVAL PARK, first of the national parks, was created in 1872 by act of Congress after the Washburn Expedition of 1870 had been sent out to verify the reports on the natural wonders of the area. It was while the expedition was in the field that the national park idea was first conceived. Having explored the region and discovered the geyser basins, the Canyon of the Yellowstone River with its falls, the hot springs and other natural phenomena, members of the expedition, encamped one night at the junction of the Gibbon and Firehole rivers, discussed what they thought should be done to preserve these wonders. The opinion was expressed that members of the party should pre-empt claims surrounding the points of interest for the sake of the profit that might be made from tourists. However, one member, Cornelius Hedges, did not approve of this plan. He suggested that there be no private ownership of any portion of that region, but that the whole of it be set apart as a great national park and that each member of the party make an effort to achieve this goal. N. P. Langford, in his diary of the expedition, says, "His (Hedges) suggestion met with an instantaneous and favorable response from all—except one—of the members of our party, and each hour since the matter was first broached, our enthusiasm has increased. . . . Our purpose to create a park can only be accomplished by untiring work and concerted action in a warfare against the incredulity and unbelief of our national legislators when our proposal shall be presented for their approval. Nevertheless, I believe we can win the battle." Thus, two years later, the Yellowstone National Primeval Park came into being, and today 3472 square miles of primeval wilderness are preserved for the enjoyment and benefit of future generations.

In addition to the features named above, this park is perhaps the nation's outstanding wildlife sanctuary. Hunters and trappers had wrought considerable havoc among the mammals and birds there, prior to park establishment. Furthermore, since the study of wildlife ecology (response to environmental influences) was little understood in those days by park administrators, there resulted much needless persecution of the so-called predator species; and it was not until passage of the Congressional Act of 1894 to protect the birds and animals of the park, that Yellowstone wildlife was saved from the relentless war waged upon it by man. However, the native birds and animals have now been largely restored. During recent years, the practice of artificially feeding bears and bison has been abandoned in an effort to return them to natural conditions. This has been done in accordance with the national policy of exhibiting in the parks all forms of nature as nearly free as possible from interference by man. Today, while driving along the roads, visitors can see moose, black bear, bison, pronghorn antelope, bighorn sheep, elk, coyote and mule deer; and for those willing to hike or ride horseback along the trails through the wilderness portions of the park, grizzly bear may be seen as well, besides numerous smaller mammals. There are more than 200 species of birds native to the park, among them the white pelican, a colony of which lives on an island in Yellowstone Lake. Attempts have been made in the past by commercial interests to dam the outlet of the lake. Public opinion has been strong enough to prevent this desecration, but it should be realized that if the level of the lake is raised by damming, it will mean not only the loss of the pelican colony, one of the last in the country, but also the inundation of much of the natural land and wildlife habitat bordering the lake. The rarest bird in the park is the large white trumpeter swan. This bird, the

Haynes

At Mammoth Hot Springs in Yellowstone National Primeval Park, the water carries limestone in solution. As the water cools, it deposites this to form the terraces that characterize these springs.

largest migratory species in North America, had been brought to the verge of extinction by gunners, and the discovery that some still bred in Yellowstone Lake was a surprise to conservationists. Every effort is now being made to hold a permanent breeding stock in the park. During migrations, geese and ducks of many species come to the park's lakes, and those that survive the ordeal of autumn gunning, find here a haven of peace on their long journey southward.

Large expanses of the park consist of grassy meadows, while other areas are covered with the picturesque gray sage. The forests are composed of solid stands of lodgepole pine; while Douglas fir, Engelmann spruce, Rocky Mountain juniper, limber pine, quaking aspen and cottonwood are present, as well as alpine fir and whitebark pine in high elevations. Most interesting among the dozens of flowering plants are the deep blue Rocky Mountain fringed or feather gentian, the yellow glacierlily, the yellow fritillary, which is a small orange or yellow bell tinged with purple, the pale pink calypso inhabiting moist or boggy woodlands, coralroot, Rocky Mountain iris, bitterroot, a small plant with a large pink or white flower, and the pinkish purple shooting star.

Yellowstone Park headquarters is at Mammoth Hot Springs within the park near the north entrance, and the address is Yellowstone Park, Wyoming. Accommodations are available at Mammoth Hot Springs Hotel, Canyon Hotel, Lake Hotel (the latter closed in 1946) and at Old Faithful Inn near the famous Old Faithful Geyser. Lodges are maintained at Mammoth Hot Springs (this one closed in 1946), Canyon, Old Faithful, Yellowstone Lake and at Camp Roosevelt near Tower Falls. Cabins are for rent at Mammoth Hot Springs, Canyon, Old Faithful, Fishing Bridge, West Thumb and at Camp Roosevelt. Many campgrounds are also available to visitors who bring their own equipment. The park is reached over the following highways: U. S. Highway 89 from Livingston, Montana, to the Gardiner entrance on the north; U. S. Highway 12 from Billings, Montana, to the Silver Gate entrance at the northeast corner of the park; U. S. Highway 20 from Cody, Wyoming, to the Sylvan Pass entrance on the east; U. S.

Highway 89 from Jackson, Wyoming, and U. S. Highway 287 from Rawlins, Wyoming, to the south entrance; and U. S. Highway 191 from Idaho Falls, Idaho, to the West Yellowstone entrance on the west. From Bozeman, Montana, U. S. Highway 191 also goes to West Yellowstone. Railroads serving the park are as follows: The Northern Pacific from Livingston to Gardiner, Montana, and from Laurel to Red Lodge, Montana; the Union Pacific to West Yellowstone and the south entrance to the park via the Jackson Hole country from Victor, Idaho; the Chicago, Burlington and Quincy to Cody, Wyoming; and the Chicago, Milwaukee, St. Paul and Pacific to the Gallatin Gateway. From these points the Yellowstone Park Transportation Company buses operate into the park. The park is open from June 20 to September 12, although some accommodations are available when the roads are free of snow about May 15 to October 15.

YOSEMITE NATIONAL PRIMEVAL PARK was established by Act of Congress in 1890. However, the famous Yosemite valley and the Mariposa Grove of sequoia trees were set aside in 1864 to be administered by the State of California. The primeval park comprises 1189 square miles of glacier-sculptured valleys and summits of the Sierra Nevada of California. Yosemite Valley itself affords one of the most awe-inspiring sights anywhere in the National Park System. Countless centuries of glacial action has worn the gray walls of the valley into domes and spires that in some places rise more than 4000 feet above the valley floor. A few of these towering rock formations are the Cathedral Spires, Basket Dome, Half Dome, North Dome, Sentinel Dome and El Capitan. Over the valley walls, like slender white plumes, plunge some of the world's highest and most beautiful waterfalls. Best known of these are the Vernal, Illilouette, Nevada, Bridalveil, Ribbon, which is the highest, 1612 feet, and Upper Yosemite, the second highest free-leaping fall in the world, having a drop of 1430 feet. Among the many peaks along the Sierra crest east of the Yosemite Valley, Mount Lyell is the highest, 13,095 feet above sea level. Although most visitors see the park in summer, increasing numbers of people are visiting it in winter, for it is then that the park takes on a new beauty. Storms cloak the forest and domes in snow, drifting clouds wreathe the summits,

Glacier-carved Half Dome provides a background for the mule deer grazing in the meadows of Yosemite Valley in Yosemite National Primeval Park.

Ralph Anderson

and sometimes when the snow is whipped by gales along the high Sierra crest, snow banners can be seen weaving off into the sky. Tree life in the park ranges from chaparral, live oak and Digger pine on the hot, dry lower slopes, to mountain hemlock and whitebark pine in the alpine country. In the intermediate zones are black oak, incense cedar, ponderosa, Jeffrey and sugar pine, red, white and Douglas fir and sequoia. Of the latter there are three groves in the park. In the Mariposa Grove there are as many as 200 trees with trunks ten feet or more in diameter at breast height. The Grizzly Giant is the largest sequoia in the park, having a trunk diameter of twenty-seven and a half feet, a circumference of ninety-six feet and a height of 209 feet. Its age is estimated to be 3800 years. Mammals of Yosemite include black bear, mule deer, marten, coyote, gray fox, yellow-bellied marmot, Columbia gray squirrel, cony and porcupine. The blue-fronted Steller jay is abundant in the valleys, and the water ouzel is frequently met with in the canyons along cold streams.

The classic example of commercial invasion and desecration within the National Park System, took place in Yosemite National Primeval Park. A water supply dam, authorized by Congress in 1913 and begun in 1922, now floods the park's Hetch Hetchy Valley. This valley was second in scenic beauty only to Yosemite Valley itself, but it has been lost to the nation because the expression of public opposition was not sufficiently strong to outweigh the demands of the small group.

Headquarters of Yosemite is within the park, and the address is Yosemite National Park, California. Hotels that are open all year are the Ahwahnee (after 1946) and Yosemite Lodge with housekeeping cabins. Accommodations are also available from May or June to September at Camp Curry, Glacier Point Hotel, Wawona Hotel, and Big Trees Lodge, and from July to September, Tuolumne Meadows Lodge on the Tioga Pass road. Glacier Point Mountain House is open from September to May to accommodate skiers. Along the High Sierra Trail there are five hikers' camps situated about ten miles apart. There are also four campgrounds in the park. Yosemite is reached from the west on State Route 140 from Merced and State Route 41 from Fresno, and from Stockton and Modesto by way of the Big Oak Flat road. From the east, Tioga Pass road to the park, open from late June until mid-October, joins U. S. Highway 395 near Mono Lake. Buses to Merced all year and to Fresno in summer connect with Yosemite Tansportation System buses for the park. During the summer there is bus service also from Lake Tahoe via Tioga pass. The park is open all year.

ZION NATIONAL PRIMEVAL PARK, located in southern Utah, was created in 1919 to protect 148 square miles of spectacular canyon country. Zion Canyon, about fifteen miles long, was carved by the Virgin River which flows through the park. The soft, cool greens of cottonwood, boxelder and willow along the river on the canyon floor offer a pleasing contrast to the dark red coloring of the surrounding canyon walls. Over the upper slopes pinyon pine and juniper make a deep green blanket. The highest point in the park is West Temple, 7795 feet above sea level and 3802 feet above the canyon floor. The Great White Throne, one of the outstanding rock formations in the park, rises 2394 feet sheer from the floor of the valley. Trails lead to all important parts of the park that are not accessible by road. The highland part of the park is noteworthy for its broad vistas, vegetative cover of ponderosa pine and scrub oak, and for the fine variety of wildlife forms. Among the park's fauna are gray fox, mule deer, bighorn sheep, mountain lion, coyote, bobcat, porcupine, yellow-bellied marmot and squirrel. Over 150 different varieties of birds have been recorded from the area, including the water ouzel, which inhabits the cool canyons.

Headquarters is within the park, and the address is Springdale, Utah. Zion Lodge and Camp Center housekeeping cabins provide accommodations. There are two public campgrounds. State Route 15 runs through the park. This connects on the west with U. S. Highway 91 from Cedar City or St. George, and on the east wth U. S. Highway 89 from Kanab or Mt. Carmel. The Union Pacific Railroad leaves visitors at Cedar City,

and the Denver and Rio Grande Western at Marysvale. The Utah Parks Company provides bus service from both points to the park. Zion is open all year.

EVERGLADES NATIONAL PRIMEVAL PARK (proposed), located on the southern tip of the Florida peninsula, will comprise a land and water area of 1892 square miles. This area is the only place in the United States that is touched by the tropical life zone which here roughly forms a crescent around the tip of the peninsula. The proposed park will differ, therefore, from all other national parks in having a flora with tropical affinities. Within the proposed park's boundaries are broad expanses of sawgrass marsh, hammock lands of dense jungle growth, prairies interspersed with picturesque stands of cabbage palm and moss-draped cypress, and mangrove forests along the coastal margins. In addition to the mainland area, the park will include most of Florida Bay and numerous keys. The most outstanding tree of the Everglades is the royal palm, tallest and most graceful of its kind. It is native to only this one section in all North America. Other interesting trees are the coppery barked gumbo limbo and the strangling fig, the latter a member of the rubber family. The fig, starting its life from a seed lodged in a crevice of bark on another tree, sends roots down and branches up, eventually enveloping and killing the host tree. Saw palmetto, needle palm, live oak and Madiera mahogany also grow in the proposed park area. In the forested parts there are epiphytes or air plants, numerous ferns, epiphytic orchids and other floral species. The most remarkable feature of the Everglades is its bird life. Nowhere else in the United States are there such large and spectacular congregations of birds. The rare, pink roseate spoonbill still breeds here in small colonies in Florida Bay. This species is found nesting elsewhere in North America today only on certain islands off the Texas coast. In the Everglades there are two species of ibis, the wood and white, which rest in rookeries. There are seven species of heron—the Ward's, great white, little blue, green, black-crowned night, yellow-crowned night and Louisiana. There are three egrets—the American, snowy and reddish, the latter being still extremely rare. During the early part of this century the egrets, as well as the spoonbills, were slaughtered in great numbers and were nearly exterminated by plume hunters catering to the millinery trade. Public opinion became aroused just in time to save the birds. Laws were enacted prohibiting the killing of wild birds for their plumage, and patrolled sanctuaries were established in the coastal areas of the Everglades region. Today these interesting birds exist again in large numbers to be enjoyed by all who care to see them. Other notable birds of the Everglades are the water turkey or anhinga, chuck-will's-widow, swallow-tailed kite, short-tailed hawk, white-crowned pigeon, several species of ducks, purple and Florida gallinules, bald eagle and turkey. Being in the path of the eastern route of birds that migrate from the West Indies and South America, a large number of the song and insectivorous migrants known to the eastern part of the United States breed or pass through this region. Cougar, black bear, gray and mangrove fox squirrel, raccoon, opossum, otter, gray fox, Florida spotted skunk, manatee or sea cow and white-tailed deer are among the mammals of the proposed park. There are several snakes here as well, and these include the black snake, king snake, tree snake and water moccasin in the swampy areas; while the coral snake and rattlesnake inhabit drier locations. The American crocodile and the alligator exist in small numbers.

In 1945 the proposed park area was established as a federal wildlife refuge to be administered by the U. S. Fish and Wildlife Service. This was done as a means of protecting the area and its wildlife which were rapidly being destroyed by fire and shooting. The warden patrol and bird sanctuaries already established here by the National Audubon Society were thus supplemented by the additional warden patrol of the federal service. Cooperation between the State of Florida and the federal government should bring the park into being before long, unless the recent discovery of oil in the vicinity should lead to the area's being made unsuitable for national park status.

Purpose of the Jackson Hole Wildlife Park

By FAIRFIELD OSBORN

IN the January-March 1946 issue of National Parks Magazine there appeared an article by Olaus J. Murie entitled "Fenced Wildlife for Jackson Hole" criticizing the conservation project which is to be created in that area. By the title and context of this criticism it is apparent that the author overlooks the underlying purposes of the Jackson Hole Wildlife Park and its associated activities, nor does he measure the great potentialities of this project for the cause of conservation.

In the first place, it is intended that this enterprise shall serve as a powerful means to a better understanding by the public of what wildlife is, and of the problems involved in its protection. At the same time methods will be developed of informing visitors concerning the great need for preserving forests, for safe-guarding watersheds and for maintaining the inviolability of primitive and wilderness areas. In other words, this project will be an all-around-the-circle conservation activity.

As to wildlife, it is not reasonable to expect the public to support measures for wildlife protection unless people in large numbers have not only the keen pleasure that comes from seeing wildlife, but also are given the opportunity of acquiring information as to the steps that have to be taken for its welfare. As matters now stand, only a limited number of people have the opportunity of seeing wildlife. The great majority go to national parks only on their vacations during the summer seasons. During these periods foliage is heavy and most animals are passing their time in the back-country. Mr. Murie is right in saying that the greatest thrill comes from gaining your own view of wildlife out in the wilderness. He likes it better, and so does anyone else who has either enough free time or free cash, or both, to enjoy this wonderful experience. But how many people have either the money or can take enough time off from their jobs to pack into the back-country? Let's put it on the line now—this project is for the many and not for the few.

Further, every person who is interested in conservation, or knows it to be a vital cause, realizes that there is far too limited public understanding of the relationship between all living natural resources—wildlife, forests, water sources and soils. The Jackson Hole Wildlife Park personnel will be headed by an experienced conservationist. The major part of his job will be to arouse among visitors a consciousness of conservation problems. Various methods of accomplishing this purpose will be adopted. We believe that success will be gained in reaching this important objective.

In addition, one of the great hopes for this project in the minds of its sponsors is that as time goes on, effective steps may be taken so that a considerable portion of Jackson Hole may become a wildlife refuge. With patience and effort and skill, it is not impossible that bands of antelope and bison may again roam free on the sagebrush flats of this beautiful valley. There are some moose there now, and a few mule deer, but not many. To accomplish such a purpose widespread public understanding and endorsement is necessary. It will be one of the wildlife park's objectives to arouse this.

The implication that the wildlife park will be suggestive of a "roadside zoo" is in contrast with the actual plans which, it is believed, will result in the creation of scenes that are free of any feeling of artificiality. The large areas holding moose, elk, mule deer, antelope and bison will be laid out and maintained in a natural condition, with the number of animals so limited in the area that over-grazing or over-browsing will not take place in the open season. In the winter artificial feeding will have to be resorted to, but there is nothing new in this

because thousands of elk are artificially fed thirty miles down the valley every winter. In fact, it was only by the adoption of this practice years ago that the great Yellowstone herd was saved from extinction.

There is mighty little new under the sun. The adverse comment to the effect that this plan, especially that part of it having to do with holding wildlife in enclosures, is starting a precedent, is not based on the facts. It might be flattery to the sponsors of the Jackson Hole Wildlife Park if they could think that they were creating an innovation, but they are not. Wildlife has been controlled and even kept within enclosures since the earliest days of the national parks in this country. In fact, the whole growth of the movement of national parks, ever since the beginning of this century, has occurred, and doubtless been aided, by the fact that visitors have had an opportunity for seeing wildlife. Such opportunities were only possible in many cases by providing enclosures. There are many instances of this. Small herds of buffalo have been enclosed in Yellowstone in summer since 1903; a sizable herd of bison and small groups of antelope, elk and deer have for years been enclosed within Wind Cave National Park, in South Dakota; bison and elk in the Platt National Park in Oklahoma; and, under the guidance of the California Academy of Sciences, in the early 20's, enclosures were set up in the Yosemite National Park in an effort to preserve the Tule elk. The effort in the present instance will be to make the Jackson Hole project the finest of its kind, with special emphasis, as mentioned above, on the educational aspects.

In Mr. Murie's article a good deal is said about the preservation of primitive wilderness areas, and that the wildlife park is to be an intrusion on such areas. Those who know the locality realize that Jackson Hole is not a wilderness area and never can be in the true sense of that term in view of the existing highways, the towns, the ranches, the lodges, the great concrete dam at the outlet of Jackson Lake, situated directly at the northerly entrance to the wildlife park, and the inevitable substantial public travel through the valley which for one reason or another is bound to increase rather than to diminish as time goes on.

The true wilderness will still be waiting for the fortunate men, women and young people who can hit the far trails for the peace and inspiration that only the wilderness can give. These wilderness areas, lying within our national parks, must be preserved for all these people, for such inspiration is a choice and priceless thing, radiating out from him who gains it to the lives of people everywhere. The nation that has permitted its wilderness to be destroyed has become sterile—bankrupted by the loss of one of its most vital assets.

There is another equally, if not more important, reason for the preservation of the primitive areas now lying within the national and state parks and monuments in our country. They are in a peculiar sense, the reservoir of our national vitality—for all of the American people—everywhere. For within the majority of them lie the forested slopes from which spring the headwaters of the streams and rivers that keep our country alive. Without them the threat of a barren America would fall upon us. Another name for a primitive area is "Mother of waters." Sacrifice these, and our country would become as desolate as once-proud Spain. And one more thing—these wilderness areas are the last remaining refuge of what we have left of our wildlife. Let there be no illusion about that.

The Jackson Hole Wildlife Park plan is not the whim of a few—but is acclaimed by all who realize its true purposes. Before the plan was launched last year, it had received the endorsement of the then-Secretary of the Interior, and of the then-Director of the U. S. Fish and Wildlife Service. It was launched under the sponsorship of the Governor of the State of Wyoming, and in full collaboration with the State Game Commission. It is being helped by the Director of the National Park Service, who is

arranging that some land under national park ownership, lying within the proposed wildlife park, may be used for its purposes.

It is the belief of the institutions and men —federal, state and private—who sponsor this project, that the Jackson Hole Wildlife Park and its affiliated activities will become a potent center for the cause of conservation. It is hoped it may grow to be an enterprise of national influence and service.

Editor's note—Fairfield Osborn is President of the New York Zoological Society. He was born in Princeton, New Jersey, in 1887. He is, in his own words, one of the lucky people who, though born and living in the East, has seen a lot of the West. His first experience was a four-hundred mile pack-trip in the White River Plateau country in Colorado, when he was a boy of twelve; followed by pack trips "back country" in Montana, Utah, Wyoming and British Columbia. He grew to know the plains and Badlands of Eastern Montana and Wyoming in days "when antelopes were almost as common as jackrabbits." For a year he pushed freight and worked track on a railroad in Nevada and California. He writes as one who knows and loves the West.

Mr. Osborn is editor of *The Pacific World* and Chairman of the publications committee of the accompanying series of recently published books on the natural history of the Pacific. He has written much on conservation and related subjects and was Chairman of the General Session on "Conservation Education" at the Eleventh North American Wildlife Conference, held in March of this year. He is a member of the American Committee for International Wildlife Protection, the U. S. Section of the International Committee for Bird Preservation, of the Explorers Club, and other outdoor organizations.

ANNUAL BOARD MEETING—1946

EXCERPTS FROM THE MINUTES

TIME: May 9. Place: The Cosmos Club, Washington, D. C. Those present: President Wharton presiding, Messrs. Baker, Bartsch, Coolodge, Culver, Treasurer Evans, Flickinger, Goodwin, Lobeck, Lodge, Myers, Newcombe, Palmer, Preble, Roberts, Wright, Executive Secretary Butcher and Director of the National Park Service Newton B. Drury, guest speaker.

From Remarks of the President

At the meeting of the Executive Committee held on November 20th it was voted to approve two releases opposing the proposed Panther Mountain and Higley Mountain dams in the Adirondack State Park. In March it was voted to oppose H. R. 1441 for the establishment of a Theodore Roosevelt National Park in North Dakota, because the area proposed fell short of national park standards; to support the $350,000 item for the acquisition of private lands in the national parks and monuments contained in the 1947 Interior Department appropriation bill as submitted by the Bureau of the Budget; to request the National Park Service to examine an area in California having a fine growth of Joshua trees, with a view to the area's possible inclusion in the Joshua Tree National Monument.

There is a lot of work waiting to be done by the Association if we can but overcome financial limitations and employ the necessary persons to do the work. The Executive Committee has voted to explore the possibilities of securing an assistant to Mr. Butcher, provided funds to cover the first year's salary can be raised. Association activities and membership have increased so much in the past three years that Mr. Butcher is now confronted with an overtime job in editing the magazine, carrying on correspondence and membership drives.

He feels that the public relations side of the work is being neglected.

Here are some of the tasks that the Association should undertake, in addition to its regular work of protecting the National Park and Monument System: The Association should take a prominent part in the proceedings of the Pan American Conservation Congress, scheduled to be held in the United States in June, 1947. It should continue to urge the passage of an enabling act to implement the Pan American Treaty for Nature Protection. It should initiate at once a policy of regular annual appropriations for acquisition of private lands within the national parks and monuments; and it should, more than ever, give its best thought and effort to helping to place the Quetico-Superior lakeland and the proposed Everglades National Park areas under permanent protection.

From Report of the Executive Secretary

In regard to the proposed "office of international conservation policy" suggested to be set up in the State Department in a letter written by President Wharton to the Secretary of State, I am glad to tell you that that department has established an office intended to fill the purpose. This office is in the International Resources Division, and it is called the Fisheries and Wildlife Branch. An attorney from the branch called at our office on March 26th to learn about our work. Among other things, I brought to his attention the need for an enabling act to implement the Pan American Treaty for Nature Protection. This interested him, and there is hope for early action.

Preliminary hearings have been held by the House Public Lands Committee on the Bill H. R. 5401 providing for the protection of the Dall sheep of Mount McKinley National Park by the killing of wolves. Gunner interests are concerned over the present reduction in the numbers of the sheep. Those who testified tried to prove that the wolves are the cause of the sheep decline, and they accused the Park Service of negligence of duty. Toward the close of the hearings I was granted permission to ask questions. If the gunners are interested in saving the sheep, why are they centering their attack upon the park instead of the entire sheep range of Alaska? Apparently the sheep are down in numbers throughout their range. Cannot much, if not most, of the blame for the loss be laid at the door of man—the most avid predator of all?

Three weeks ago, Washington State newspapers published information concerning a new drive to open Olympic National Primeval Park to logging. The alleged purpose of opening the park to logging was to alleviate a shortage of building materials for veterans' housing. We learned that the Civilian Production Authority endorsed the idea, and in that direction I have attempted to do a little educational work. We learned also that the governor and the congressional delegation from Washington were opposed to logging the park. It is obvious that this effort stems from local lumber interests which are ever alert to discover some excuse to break into this park. A recent issue of *West Coast Lumberman* contained a statement that there is enough timber in Oregon and Washington, exclusive of the park, to build 73,000,000 five-room homes.

RESOLUTIONS ADOPTED

Purchase of Private Lands

WHEREAS there are some 625,000 acres of privately owned lands within the exterior boundaries of the national parks and monuments; and

WHEREAS because of non-conforming and often destructive uses to which these lands are being or are likely to be put, they constitute a menace to these parks and monuments;

THEREFORE, BE IT RESOLVED: That the Board of Trustees of the National Parks Association, at its annual meeting on May 9, 1946, strongly urges upon Congress the need of initiating a continuing policy for purchase of these lands over a period of years, and

urges approval of the $350,000 item for this purpose included in the Interior Department Appropriation bill for 1947 as recommended by the Bureau of the Budget.

Olympic Logging

It has come to the attention of the Board of Trustees of the National Parks Association that commercial interests are again proposing the opening of the Olympic National Primeval Park to logging—this time nominally to provide building materials for veterans' houses—and that these interests are said to be organizing a nation-wide drive to this end;

THEREFORE, the Board at its annual meeting on May 9, 1946, goes on record emphatically in opposition to this proposal, which is contrary to the long established policy governing the National Park System which this Association has supported for the twenty-five years of its existence. This great and rich country certainly can afford to preserve untouched the 85/100ths of one percent of its area which is set aside in national parks for the public enjoyment of its great beauty.

Mt. McKinley Wolves and Sheep

WHEREAS the recent decline in numbers of the Dall mountain sheep in Mt. McKinley National Park, Alaska, is thought by competent scientists to be due in large part to diseases and other unfavorable factors rather than to predation by wolves; and

WHEREAS the National Park Service, under existing authority, is already taking steps to reduce the wolf population in the park as a precautionary measure;

THEREFORE, BE IT RESOLVED: That the Board of Trustees of the National Parks Association at its annual meeting on May 9, 1946, opposes Senate 1999 and H. R. 5401 directing the Secretary of the Interior to undertake the immediate reduction in the number of wolves and other predators in the park as being not only unnecessary, but also inadvisable in directing attention to the killing of wolves as the solution of the problem, and ignoring the other factors involved.

Pan American Treaty Enabling Act

The Treaty on Nature Protection and Wildlife Preservation in the American Republics has been ratified by eight American countries up to the present time: El Salvador, the Dominican Republic, Venezuela, Ecuador, Mexico, Guatemala, Haiti and the United States of America, but it has never been implemented by the last named. The Board of Trustees of the National Parks Association at its annual meeting on May 9, 1946, desires to reaffirm its previous recommendation that an enabling act be prepared and be submitted to the Congress by the State Department at the earliest possible time. We believe it important that such an act should become law prior to the scheduled meeting of the Pan American Conservation Congress in June 1947.

THE PARKS AND CONGRESS

79th Congress to July 1, 1946

H. R. 6335 (Johnson of Oklahoma, from the Committee on Appropriations) Making appropriations for the Department of the Interior for the fiscal year ending June 30, 1947. Introduced May 7, 1946.—National Parks Association **Release No. 54,** issued May 17, 1946, informed members about the cuts made by the House of Representatives in the estimates for the National Park Service, Interior Department, as submitted by the Bureau of the Budget. On June 8, the Senate Sub-committee on Interior Appropriations submitted its report on the bill. The report restored all items to as much as, or more than, the Budget estimates, except the item of $350,000 for private land acquisition. Like the House, the Senate report omitted this item. Senate figures are as follows: Salaries and expenses, $779,320; regional offices, $750,000; national parks, $3,314,000; parkways, $15,000,000. The Senate report added the following item: To provide for constructing a lodge, dock, warehouse and other facilities in the Bartlett Cove area of Glacier Bay National Monument in Alaska, including expenses for the protection of the monument, $1,250,000. This would make the monument accessible to visitors. It is expected that the bill, as it will finally be passed by Congress, will be a compromise between House and Senate figures.

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